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Forest Service

Rocky Mountain
Forest and Range
Experiment Station

Fort Collins,
Colorado 80526

General Technical
Report RM-123



Major Habitat Types, Community Types, and Plant Communities in the Rocky Mountains

Robert R. Alexander

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Abstract

Habitat types, community types, and plant communities in the Rocky Mountains in which interior *Pinus ponderosa*, interior *Pseudotsuga menziesii*, interior *Abies concolor*, *Picea pungens*, *Populus tremuloides*, *Pinus contorta*, *Picea engelmannii*, and *Abies lasiocarpa* occur are tabulated. Included are the name, location, site, successional status, principal tree and understory associates, and the authority.

Major Habitat Types, Community Types, and Plant Communities in the Rocky Mountains

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Major Habitat Types, Community Types, and Plant Communities in the Rocky Mountains

Robert R. Alexander

Because terminology in ecology is not uniformly used or understood, the terms and concepts used in this paper are defined below.

"Climax" vegetation is that which has attained a steady state with its environment; species of climax vegetation successfully maintain their population sizes, although their exact locations may be dynamic in space. The classification of climax vegetation used in this paper was first proposed by Tansley (1935). Daubenmire (1968), Hoffman and Alexander (1976), and Pfister et al. (1977) further elaborated on the definition, usage, and limitations. "Primary climax" develop where recurring disturbance does not influence the structure or composition of the vegetation. "Climatic climax" vegetation develops on gentle upland or plains topography with well-developed soils originating in place. Topography and soil supporting climax vegetation in mountainous regions are necessarily different from that of plains regions. Where soils or topography exert sufficient influence to produce self-perpetuating vegetation distinct from the climatic climax, the terms "edaphic climax" and "topographic climax," respectively, are used to describe the steady-state vegetation. Where special topographic conditions also favor the development of edaphic conditions distinct from the normal, the term "topo-edaphic climax" is often used to describe the steady-state vegetation.

Where recurring disturbance, such as grazing, mechanical scarification, or fire, exerts a predominant influence on the composition or structure of steady-state vegetation, the term "disclimax" is used. In this case, the current vegetation may be developing into a different community (secondary climax) than the primary climax; however, in most forests, primary and secondary climax are the same. "Seral" vegetation is that which has not attained a steady state; current populations of some species are being replaced by others. In some instances, trends toward the "climax" vegetation can be identified, in others these trends are not evident, and in still others the vegetation may not revert to primary climax.

"Habitat type" is the basic unit in classifying lands based on potential (climax) natural vegetation. A habitat type represents, collectively, all parts of the landscape that support, or have the potential of supporting, the same climax vegetation. The climax vegetation upon which the classification is based is called a "plant association". The first level of the classification is the "series," which is the grouping of all plant associations having the same overstory (climax) dominants. For example, all habitat types with *Pinus ponderosa* as the potential climax dominant are

grouped into the *Pinus ponderosa* series. The series is more than an artificial grouping of habitat types using the potential climax overstory dominant as the convenient thread of continuity. There is an ecologic basis for grouping habitat types into series. For example, *Pinus ponderosa* occupies areas that are warmer and drier than areas where *Pseudotsuga menziesii* is climax. Continuing higher into the mountains in the central and southern Rockies, *Abies concolor*, *Picea pungens*, *Populus tremuloides*, *Pinus contorta*, *Picea engelmannii*, and *Abies lasiocarpa* successively become the dominant species. It is assumed that self-perpetuating populations of these dominant trees are related to the macroclimate, whereas the undergrowth vegetation is related more to microclimate and soils.

Habitat types within a series are distinguished on the basis of undergrowth vegetation unions, which are the second level of classification and the smallest structural unit of the vegetation. Each "union" consists of a population of one or more species that exhibit similar microenvironmental requirements. The species comprising the union may vary from place to place, but the variation is within narrow limits. A given species may occur in more than one union, but frequency and occurrence are different between unions. Unions are usually regional; their composition changes in different regions.

Much of the forest land in the West has been disturbed by fire, logging, grazing, insect and disease outbreaks, etc., for many years. Because of these disturbances, not all of the land area currently supports climax vegetation. It is possible that vegetation over much of the area of a habitat type will never attain climax status. While it is important to consider land units in terms of their potential climax status, it is not always possible to identify the climax plant association. The term "community type" has been used to identify vegetation which may be climax, but about which there is uncertainty. Community types have one or more overstory dominants and an undergrowth union. The undergrowth may be the climax union, but the overstory dominants are usually long-lived seral vegetation that may be self-perpetuating because of repeated disturbance that prevents or slows down the succession to climax vegetation.

"Plant communities" are used here to identify vegetation that was classified by methodology other than that used for habitat types. Plant communities may later be found to be plant associations or seral vegetation. They may be used, therefore, to identify habitat types or community types.

Tables A1 through A8 in the appendix list the identified habitat types, community types, and plant com-

munities where interior *Pinus ponderosa*, interior *Pseudotsuga menziesii*, interior *Abies concolor*, *Picea pungens*, *Populus tremuloides*, *Pinus contorta*, *Picea engelmannii*, and *Abies lasiocarpa* are the major climax, co-climax, minor climax, or major seral species. Also included are location, site, principal tree and understory associates, and the authority for the classification.

There are some items in the tables that need further clarification:

1. The description of the site, i.e., warm dry, cool dry, etc., refers only to the series and location and, therefore, is relative. Obviously a warm dry *Pinus ponderosa* site is not the same as a warm dry *Abies lasiocarpa* site. Moreover, a warm dry site in Arizona may not be the same as a warm dry site in Idaho even within a series.

2. In those habitat types where more than one phase is recognized, only the typical phase is listed. "Phase" is a subdivision of a habitat type representing a characteristic variation in climax vegetations and environmental conditions, respectively.

3. A number of communities have been lumped together that the cited authority recognized as different. For example, Mueggler and Campbell (1982) identified the following four community types:

- a) *Populus tremuloides*/*Amelanchier alnifolia*-*Pachistima myrsinites*
- b) *Populus tremuloides*/*Amelanchier alnifolia*-*Symphoricarpos oreophilus*
- c) *Populus tremuloides*/*Amelanchier alnifolia*-*Spiraea betulifolia*
- d) *Populus tremuloides*/*Amelanchier alnifolia*-*Calamagrostis rubescens*

The author lumped these into a *P. tremuloides*/*A. alnifolia* community type to reduce the number of communities that must be dealt with.

References Cited

Published

- Alexander, Billy G., Jr., Frank Ronco, Jr., E. Lee Fitzhugh, and John A. Ludwig. 1984a. A classification of forest habitat types on the Lincoln National Forest, New Mexico. USDA Forest Service General Technical Report RM-104, 29 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.
- Alexander, Billy G., Jr., Frank Ronco, Jr., Alan S. White, and John A. Ludwig. 1984b. Douglas-fir habitat types of northern Arizona. USDA Forest Service General Technical Report RM-108, 13 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.
- Daubenmire, R. 1968. Plant communities: A textbook of plant synecology. 300 p. Harper and Row, New York, N.Y.
- Daubenmire, R., and Jean B. Daubenmire. 1968. Forest vegetation of eastern Washington and northern Idaho. Technical Bulletin 60, 104 p. Washington Agricultural Experiment Station, Washington State University, Pullman.
- Hanks, Jess P., E. Lee Fitzhugh, and Sharon R. Hanks. 1983. A habitat type classification system for ponderosa pine forests of northern Arizona. USDA Forest Service General Technical Report RM-97, 22 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.
- Hess, Karl. 1981. Phyto-edaphic study of habitat types of the Arapaho and Roosevelt National Forests. Ph.D. dissertation, 558 p. Colorado State University, Fort Collins.
- Hoffman, George R., and Robert R. Alexander. 1976. Forest vegetation of the Bighorn Mountains, Wyoming: A habitat type classification. USDA Forest Service Research Paper RM-170, 38 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.
- Hoffman, George R., and Robert R. Alexander. 1980. Forest vegetation of the Routt National Forest in northwestern Colorado: A habitat type classification. USDA Forest Service Research Paper RM-221, 41 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.
- Hoffman, George R., and Robert R. Alexander. 1983. Forest vegetation of the White River National Forest in western Colorado: A habitat type classification. USDA Forest Service Research Paper RM-249, 36 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.
- Mauk, Donald L., and Jan A. Henderson. 1984. Forest habitat types of northern Utah. USDA Forest Service General Technical Report, INT-170, 89 p. Intermountain Forest and Range Experiment Station, Ogden, Utah.
- Moir, W. H. 1969. The lodgepole pine zone in Colorado. American Midland Naturalist 81:87-98.
- Moir, William H., and John A. Ludwig. 1979. A classification of spruce-fir and mixed conifer habitat types of Arizona and New Mexico. USDA Forest Service Research Paper RM-207, 47 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.
- Mueggler, Walter F., and Robert B. Campbell. 1982. Aspen community types on the Caribou and Targhee National Forests in southeastern Idaho. USDA Forest Service Research Paper INT-294, 32 p. Intermountain Forest and Range Experiment Station, Ogden, Utah.
- Pfister, Robert D. 1972. Vegetation and soils in the subalpine forests of Utah. Ph.D. dissertation, Washington State University, Pullman. Dissertation Abstract 33(06):98.
- Pfister, Robert D., Bernard L. Kovalchik, Stephen F. Arno, and Richard C. Presby. 1977. Forest habitat types of Montana. USDA Forest Service General Technical Report INT-34, 174 p. Intermountain Forest and Range Experiment Station, Ogden, Utah.

- Steele, Robert, Robert D. Pfister, Russell A. Ryker, and Jay A. Kittams. 1981. Forest habitat types of central Idaho. USDA Forest Service General Technical Report INT-114, 138 p. Intermountain Forest and Range Experiment Station, and Intermountain Region, Ogden, Utah.
- Steele, Robert, Stephen V. Cooper, David M. Ondov, David W. Roberts, and Robert D. Pfister. 1983. Forest habitat types of eastern Idaho-western Wyoming. USDA Forest Service General Technical Report INT-144, 122 p. Intermountain Forest and Range Experiment Station, and Intermountain Region, Ogden, Utah.
- Tansley, A. G. 1935. The use and abuse of vegetational concepts and terms. *Ecology* 16:284-307.
- Wirsing, John M., and Robert R. Alexander. 1975. Forest habitat types on the Medicine Bow National Forest, southeastern Wyoming: Preliminary report. USDA Forest Service General Technical Report RM-12, 11 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.
- Youngblood, Andrew P., and Walter F. Mueggler. 1981. Aspen community types on the Bridger-Teton National Forest in western Wyoming. USDA Forest Service Research Paper INT-272, 34 p. Intermountain Forest and Range Experiment Station, Ogden, Utah.
- Unpublished**
- Alexander, Billy G., Jr., E. Lee Fitzhugh, Frank Ronco, Jr., and John A. Ludwig. 1984c. A classification of forest habitats of the Cibola National Forest, New Mexico. USDA Forest Service [Mimeo of manuscript in preparation] [Report], 120 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.
- Cooper, Steven, Kenneth Neiman, and Robert Steele. 1983. Forest habitat types of northern Idaho. USDA Forest Service [Mimeo of manuscript in preparation] [Report], 210 p. Intermountain Forest and Range Experiment Station, Ogden, Utah, and Northern Rocky Mountain Region, Missoula, Mont.
- DeVelice, Robert L., John A. Ludwig, William H. Moir, and Frank Ronco, Jr. 1984. A classification of forest habitat types in northern New Mexico and southern Colorado. USDA Forest Service [Mimeo of manuscript in preparation] [Report], 173 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.
- Fitzhugh, E. Lee, William H. Moir, John A. Ludwig, and Frank Ronco, Jr. 1984. Forest habitat types in the Apache, Gila, and part of the Cibola National Forests. USDA Forest Service [Mimeo of manuscript in preparation] [Report], 145 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.
- Hess, Karl, and Clinton H. Wasser. 1982. Grassland, shrubland and forestland habitat types of the White River-Arapaho National Forest. USDA Forest Service [Mimeo] Report, 335 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.
- Hoffman, George R. 1984. Forest vegetation of the Black Hills and Bearlodge Mountains of South Dakota and Wyoming: A habitat type classification. Personal correspondence. On file at USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.
- Komarkova, Vera. 1984. Habitat types on selected parts of the Gunnison and Uncompahgre National Forests. USDA Forest Service [Mimeo] Report, 254 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.
- Steen, Ordell, and Ralph Dix. 1974. A preliminary classification of Colorado subalpine forests. [Mimeo] Report, 10 p. Colorado State University, Department of Biology and Plant Pathology, Fort Collins, Colo. (On file at USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.).
- Youngblood, Andrew P. 1984. Coniferous forest habitat types of central and southern Utah. USDA Forest Service [Mimeo of manuscript in preparation] [Report], 302 p. Intermountain Forest and Range Experiment Station, Ogden, Utah.

Table A1.—Habitat types, community types, and plant communities in which interior *Pinus ponderosa* is climax, co-climax, minor climax, or seral.

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. ponderosa</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus ponderosa</i> series						
<i>Pinus ponderosa</i> / <i>Arctostaphylos patula</i> H.T.	Mountains of southern Utah	Warm dry	Climax	<i>Pinus flexilis</i> <i>Juniperus scopulorum</i>	<i>A. patula</i> <i>Quercus gambelii</i> <i>Purshia tridentata</i> <i>Berberis repens</i>	Youngblood 1984
<i>Pinus ponderosa</i> / <i>Arctostaphylos pungens</i> H.T.,C.T.	Mountains of northern and central Arizona	Warm dry	Climax	Usually pure stands	<i>A. pungens</i> <i>Quercus</i> spp. <i>Bouteloua gracilis</i> <i>Muhlenbergia virescens</i> <i>A. patula</i>	Fitzhugh et al. 1984 Hanks et al. 1983
<i>Pinus ponderosa</i> / <i>Arctostaphylos uva-ursi</i> H.T.	Black Hills and Bearlodge Mountains, South Dakota and eastern Wyoming; mountains of northern New Mexico and southern Colorado	Warm dry	Climax	Usually pure stands (SD,WY) <i>Pseudotsuga menziesii</i> (CO,NM)	<i>A. uva-ursi</i> <i>Carex</i> spp. <i>Lathyrus ochroleucus</i> <i>Festuca arizonica</i> (CO,NM) <i>Muhlenbergia montana</i> (CO,NM)	DeVelice et al. 1984 Hoffman 1984
<i>Pinus ponderosa</i> / <i>Artemisia nova</i> H.T. [<i>P. ponderosa</i> / <i>Artemisia arbuscula</i> H.T.]	Mountains of southern Utah and southern Colorado	Warm dry	Climax	<i>J. scopulorum</i> <i>Pinus edulis</i>	<i>A. nova</i> <i>A. arbuscula</i> <i>Chrysothamnus viscidiflorus</i> <i>Tetradymia canescens</i> <i>Q. gambelii</i>	DeVelice et al. 1984 Youngblood 1984
<i>Pinus ponderosa</i> / <i>Cercocarpus ledifolius</i> H.T.	Mountains of central and southern Utah	Warm dry	Climax	<i>J. scopulorum</i> <i>P. edulis</i>	<i>C. ledifolius</i> <i>Juniperus</i> spp. <i>Q. gambelii</i> <i>Symphoricarpos oreophilus</i> <i>Artemisia tridentata</i>	Youngblood 1984
<i>Pinus ponderosa</i> / <i>Cercocarpus montanus</i> H.T.	Front Range, north-central Colorado	Warm very dry	Climax	Usually pure stands	<i>C. montanus</i> <i>Artemisia frigida</i> <i>Opuntia polyacantha</i> <i>Carex rossii</i> <i>Geranium fremontii</i>	Hess 1981
<i>Pinus ponderosa</i> / <i>Cowania mexicana</i> C.T.	Mountains of northern Arizona	Warm dry	Climax	Usually pure stands	<i>C. mexicana</i> <i>B. gracilis</i> <i>M. montana</i>	Hanks et al. 1983
<i>Pinus ponderosa</i> / <i>Juniperus communis</i> H.T.	Bighorn Mountains, north-central Wyoming, Black Hills and Bearlodge Mountains, South Dakota and eastern Wyoming	Warm dry to well-drained	Climax	Usually pure stands	<i>J. communis</i> <i>Hesperochloa kingii</i> <i>Astragalus miser</i> <i>Poa pratensis</i> <i>Clematis tenuiloba</i> <i>B. repens</i> <i>Spirea betulifolia</i>	Hoffman 1984 Hoffman and Alexander 1976
<i>Pinus ponderosa</i> - <i>Juniperus scopulorum</i> H.T.	Black Hills and Bearlodge Mountains South Dakota and eastern Wyoming	Warm dry to well-drained	Climax to co-climax with <i>J. scopulorum</i>	<i>J. scopulorum</i>	<i>Stipa comata</i> <i>Rhus aromatica</i> <i>A. frigida</i>	Hoffman 1984

Table A1.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. ponderosa</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus ponderosa</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of northern and cen- tral Idaho and eastern Washing- ton	Warm dry	Climax	Usually pure stands	<i>P. malvaceus</i> <i>Holodiscus discolor</i> <i>Ceanothus</i> <i>sanguineus</i> <i>Galium boreale</i> <i>Erythronium grandiflorum</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Steele et al. 1981
<i>Pinus ponderosa</i> / <i>Physocarpus monogynus</i> H.T.	Bighorn Mountains north-central Wyoming; Black Hills and Bearlodge Moun- tains, South Dakota and east- ern Wyoming	Warm dry	Climax	Usually pure stands	<i>P. monogynus</i> <i>S. betulifolia</i> <i>Symphoricarpos</i> <i>albus</i> <i>B. repens</i> <i>P. pratensis</i> <i>Cystopteris fragilis</i>	Hoffman 1984 Hoffman and Alex- ander 1976
<i>Pinus ponderosa</i> / <i>Prunus virginiana</i> H.T.	Mountains of southeastern Montana	Warm dry	Climax	Usually pure stands	<i>P. virginiana</i> <i>Amelanchier alnifolia</i> <i>S. albus</i> <i>B. repens</i> <i>Shepherdia</i> <i>canadensis</i>	Pfister et al. 1977
<i>Pinus ponderosa</i> / <i>Purshia tridentata</i> H.T.	Mountains of northern and cen- tral Idaho, Mon- tana, eastern Washington, southern Utah, and Front Range of north-central Colorado	Warm dry	Climax	<i>J. scopulorum</i>	<i>P. tridentata</i> <i>A. tridentata</i> <i>Festuca idahoensis</i> <i>Agropyron spicatum</i> <i>P. virginiana</i> <i>C. rossii</i> <i>Aristida longiseta</i> <i>Balsamorhiza sagittata</i>	Daubenmire and Daubenmire 1968 Hess 1981 Pfister et al. 1977 Steele et al. 1981 Youngblood 1984
<i>Pinus ponderosa</i> / <i>Quercus gambelii</i> H.T. [<i>P. ponderosa</i> - <i>Pinus edulis</i> / <i>Q. gambelii</i> H.T.]	Mountains of southern Utah, central and southwestern Colorado, New Mexico, and eastern Arizona	Warm dry	Climax	<i>P. edulis</i> <i>P. menziesii</i> <i>Juniperus</i> spp.	<i>Q. gambelii</i> <i>Carex geyeri</i> <i>S. oreophilus</i> <i>J. communis</i> <i>B. repens</i> <i>Rosa woodsii</i> <i>Koeleria cristata</i> <i>Poa fendleriana</i> <i>Muhlenbergia</i> spp. <i>Schizachyrium</i> <i>scoparium</i>	Alexander et al. 1984a, 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Hess and Wasser 1982
<i>Pinus ponderosa</i> / <i>Quercus grisea</i> H.T.	Mountains of northern New Mexico	Warm dry	Climax	<i>P. edulis</i> <i>Juniperus</i> spp.	<i>Q. grisea</i> <i>Muhlenbergia</i> spp.	Fitzhugh et al. 1984
<i>Pinus ponderosa</i> - <i>Quercus macrocarpa</i> H.T.	Black Hills and Bearlodge Moun- tains, South Dakota and eastern Wyoming	Warm dry	Climax	<i>Q. macrocarpa</i>	<i>A. alnifolia</i> <i>B. repens</i> <i>Ostrya virginiana</i> <i>Elymus virginicus</i>	Hoffman 1984
<i>Pinus ponderosa</i> / <i>Quercus undulata</i> H.T.	Mountains of eastern Arizona and New Mexico	Warm dry	Climax	<i>P. edulis</i> <i>Juniperus</i> spp.	<i>Q. undulata</i> <i>Muhlenbergia</i> spp. <i>B. gracilis</i> <i>Andropogon gerardii</i>	Alexander et al. 1984a DeVelice et al. 1984
<i>Pinus ponderosa</i> / <i>Spiraea betulifolia</i> H.T.	Bighorn Moun- tains, north- central Wyoming	Warm dry	Climax	Usually pure stands	<i>S. betulifolia</i> <i>S. albus</i> <i>F. idahoensis</i> <i>H. kingii</i> <i>C. tenuiloba</i> <i>G. boreale</i>	Hoffman and Alex- ander 1976

Table A1.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. ponderosa</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus ponderosa</i> / <i>Symphoricarpos albus</i> H.T.	Mountains of eastern Washington, northern and central Idaho, and central and southeastern Montana; Black Hills and Bearlodge Mountains, South Dakota and eastern Wyoming	Warm dry	Climax	<i>Populus tremuloides</i> (SD,WY only and not in all stands)	<i>S. albus</i> <i>S. betulifolia</i> <i>B. repens</i> <i>Rosa</i> spp. <i>J. communis</i> <i>S. canadensis</i> <i>B. sagittata</i> <i>P. virginiana</i> <i>Oryzopsis asperifolia</i> <i>Carex foenea</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Hoffman 1984 Pfister et al. 1977 Steele et al. 1981
<i>Pinus ponderosa</i> / <i>Symphoricarpos oreophilus</i> H.T.	Mountains of central Idaho and southern Utah	Warm dry	Climax	Usually pure stands (ID) <i>J. scopulorum</i> (UT) <i>P. tremuloides</i> (UT)	<i>S. oreophilus</i> <i>P. virginiana</i> <i>P. tridentata</i> <i>A. alnifolia</i> <i>A. spicatum</i> <i>B. repens</i>	Steele et al. 1981 Youngblood 1984
<i>Pinus ponderosa</i> / <i>Agropyron spicatum</i> H.T.	Mountains of eastern Washington, Idaho, and southeastern and west-central Montana, Bighorn Mountains, north-central Wyoming	Hot very dry	Climax	Usually pure stands. May contain <i>J. scopulorum</i>	<i>A. spicatum</i> <i>B. sagittata</i> <i>Artemisia</i> spp. <i>A. longiseta</i> <i>Poa</i> spp. <i>Bromus tectorum</i> <i>Melica bulbosa</i> <i>Lomatium dissectum</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Hoffman and Alexander 1976 Pfister et al. 1977 Steele et al. 1981
<i>Pinus ponderosa</i> / <i>Andropogon</i> spp. H.T.	Mountains of southeastern Montana	Warm dry	Climax	<i>J. scopulorum</i>	<i>A. gerardii</i> <i>A. scoparius</i>	Pfister et al. 1977
<i>Pinus ponderosa</i> / <i>Bouteloua gracilis</i> H.T.	Mountains of Arizona and New Mexico	Warm very dry	Climax	<i>P. edulis</i> <i>Juniperus</i> spp.	<i>B. gracilis</i> <i>Q. gambelii</i> <i>Andropogon hallii</i> <i>A. tridentata</i> <i>Vitis</i> spp. <i>M. montana</i> <i>K. cristata</i>	Alexander et al. 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Hanks et al. 1983
<i>Pinus ponderosa</i> / <i>Festuca arizonica</i> H.T.	Mountains of Arizona, New Mexico, western and southern Colorado	Warm dry	Climax	Usually pure stands. May contain <i>P. edulis</i> <i>Juniperus</i> spp.	<i>F. arizonica</i> <i>Q. gambelii</i> <i>M. montana</i> <i>B. gracilis</i> <i>Ceanothus fendleri</i> <i>P. fendleriana</i> <i>Ribes</i> spp.	Alexander et al. 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Hanks et al. 1983 Komarkova 1984
<i>Pinus ponderosa</i> / <i>Festuca idahoensis</i> H.T.	Mountains of eastern Washington, Idaho, central Montana, and northern Utah; Bighorn Mountains, north-central Wyoming	Warm dry	Climax	<i>Pinus contorta</i> (UT) <i>P. tremuloides</i> (UT) <i>J. scopulorum</i> (UT)	<i>F. idahoensis</i> <i>A. spicatum</i> <i>B. sagittata</i> <i>S. albus</i> <i>Calamagrostis rubescens</i> <i>Achillea millefolium</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Hoffman and Alexander 1976 Mauk and Henderson 1980 Pfister et al. 1977 Steele et al. 1981
<i>Pinus ponderosa</i> / <i>Hesperochloa kingii</i> H.T.	Mountains of southern Wyoming and north-central Colorado	Warm dry	Climax	<i>P. menziesii</i> <i>J. scopulorum</i>	<i>H. kingii</i> <i>A. frigida</i> <i>Ribes cereum</i> <i>Geranium richardsonii</i> <i>Sedum stenopetalum</i> <i>Allium geyeri</i>	Hess 1981

Table A1.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. ponderosa</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus ponderosa</i> / <i>Muhlenbergia montana</i> H.T.	Mountains of cen- tral and southern Utah, Front Range north- central Colorado, mountains of New Mexico and eastern Arizona	Warm very dry	Climax	<i>P. menziesii</i> <i>P. edulis</i> <i>Juniperus</i> spp.	<i>M. montana</i> <i>Agropyron griffithsii</i> <i>Quercus</i> spp. <i>Muhlenbergia</i> <i>filiculmis</i> <i>Achillea lanulosa</i> <i>B. gracilis</i> <i>C. rossii</i>	Alexander et al. 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Hess 1981 Youngblood 1984
<i>Pinus ponderosa</i> / <i>Muhlenbergia virescens</i> H.T. [<i>P. ponderosa</i> / <i>M. Virescens-Festuca</i> <i>arizonica</i> H.T.] [<i>P. ponderosa</i> - <i>M.</i> <i>virescens</i> - <i>F. arizonica</i> - <i>Bouteloua gracilis</i> C.T.]	Mountains of northern and eastern Arizona, and New Mexico	Warm dry	Climax	<i>Pinus strobi-</i> <i>formis</i> <i>P. edulis</i> <i>Juniperus</i> <i>depeana</i>	<i>M. virescens</i> <i>Q. gambelii</i> <i>Carex</i> spp. <i>Senecio wootonii</i> <i>Pseudocymopterus</i> <i>montanus</i> <i>Poa</i> spp. <i>C. fendleri</i> <i>M. montana</i> <i>F. arizonica</i>	Alexander et al. 1984c Fitzhugh et al. 1984 Hanks et al. 1983
<i>Pinus ponderosa</i> / <i>Oryzopsis hymenoides</i> H.T.	Mountains of northern New Mexico	Warm dry	Climax	<i>Juniperus</i> <i>monosperma</i>	<i>O. hymenoides</i> <i>Muhlenbergia</i> spp.	DeVelice et al. 1984
<i>Pinus ponderosa</i> / <i>Poa fendleriana</i> C.T.	Mountains of northern Arizona	Warm dry	Climax	Usually pure stands	<i>P. fendleriana</i> <i>M. montana</i> <i>Q. gambelii</i>	Hanks et al. 1983
<i>Pinus ponderosa</i> / <i>Poa longiligula</i> C.T.	Mountains of northern Arizona	Warm dry	Climax	Usually pure stands	<i>P. longiligula</i> <i>B. repens</i> <i>Senecio multilobatus</i> <i>Q. gambelii</i>	Hanks et al. 1983
<i>Pinus ponderosa</i> / <i>Stipa comata</i> H.T.	Mountains of northern Idaho and eastern Washington	Warm very dry	Climax	Usually pure stands	<i>S. comata</i> <i>A. longiseta</i>	Daubenmire and Daubenmire 1968
<i>Pinus ponderosa</i> / <i>Stipa occidentalis</i> H.T.	Mountains of cen- tral Idaho	Warm very dry	Climax	Usually pure stands	<i>S. occidentalis</i> <i>Stipa thurberiana</i> <i>P. tridentata</i>	Steele et al. 1981
<i>Pinus ponderosa</i> / <i>Carex geyeri</i> H.T.	Mountains of northern Utah, southern Wyo- ming, and western Colorado	Warm dry	Climax	<i>P. contorta</i> <i>P. tremuloides</i>	<i>C. geyeri</i> <i>B. repens</i> <i>Pachistima</i> <i>myrsinites</i> <i>Arnica cordifolia</i> <i>Poa nervosa</i>	Komarkova 1984 Mauk and Hender- son 1984 Wirsing and Alex- ander 1975
<i>Pinus ponderosa</i> / <i>Carex heliophylla</i> H.T.	Black Hills and Bearlodge Moun- tains, South Dakota and eastern Wyoming	Warm dry	Climax	Usually pure stands	<i>C. heliophylla</i>	Hoffman 1984
<i>Pinus ponderosa</i> / <i>Carex rossii</i> H.T.	Front Range, north-central Colorado	Warm dry	Climax	Usually pure stands	<i>C. rossii</i> <i>J. communis</i> <i>K. cristata</i> <i>M. montana</i> <i>Mertensia lanceolata</i>	Hess 1981
<i>Pinus ponderosa</i> / Scree H.T. [<i>P. ponderosa</i> / Rockland H.T.] [<i>P. ponderosa</i> / <i>Ribes inerme</i> H.T.]	Mountains of eastern Arizona, New Mexico, and southern Colo- rado	Warm dry	Climax	<i>P. menziesii</i> <i>P. strobiformis</i>	<i>Quercus</i> spp. <i>Muhlenbergia</i> spp. <i>F. arizonica</i> <i>R. inerme</i>	Alexander et al. 1984c DeVelice et al. 1984 Fitzhugh et al. 1984

Table A1.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. ponderosa</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus ponderosa</i> / Cinder Soils H.T.	Mountains of north-central and northwestern New Mexico	Warm dry	Climax	<i>P. edulis</i>	<i>R. cereum</i> <i>M. montana</i> <i>Lupinus</i> spp. <i>Q. gambelii</i>	Alexander et al. 1984c
<i>Pinus ponderosa</i> / Riparian H.T. [<i>P. ponderosa</i> / <i>Poa pratensis</i> H.T.]	Zuni Mountains, New Mexico	Cool moist	Climax	Usually pure stands	<i>Q. gambelii</i> <i>G. boreale</i> <i>Iris missouriensis</i> <i>P. pratensis</i> <i>Juncus</i> spp.	Alexander et al. 1984c DeVelice 46 al. 1984
<i>Pinus flexilis</i> series						
<i>Pinus flexilis</i> / <i>Juniperus communis</i> H.T.	Front Range, north-central Colorado	Warm dry	Seral to <i>P. flexilis</i>	<i>P. flexilis</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>Calamagrostis</i> <i>purpurascens</i> <i>C. rossii</i> <i>Arenaria fendleri</i> <i>Erigeron compositus</i>	Hess 1981
<i>Pinus flexilis</i> / <i>Agropyron spicatum</i> H.T.	Mountains of Montana east of Continental Divide	Warm very dry	Minor climax to <i>P. flexilis</i>	<i>P. flexilis</i> <i>J. scopulorum</i> (co-climax)	<i>A. spicatum</i> <i>H. kingii</i> <i>K. cristata</i> <i>B. gracilis</i>	Pfister et al. 1977
<i>Pseudotsuga menziesii</i> series						
<i>Pseudotsuga menziesii</i> / <i>Acer glabrum</i> H.T.	Mountains of central Idaho	Cool moist	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. tremuloides</i>	<i>A. glabrum</i> <i>A. alnifolia</i> <i>P. virginiana</i> <i>Penstemon wilcoxii</i> <i>Arenaria macrophylla</i>	Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Arctostaphylos patula</i> H.T.	Mountains of central and southern Utah	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>A. patula</i> <i>B. repens</i> <i>Ceanothus martinii</i> <i>S. oreophilus</i>	Youngblood 1984
<i>Pseudotsuga menziesii</i> / <i>Arctostaphylos uva-ursi</i> H.T.	Mountains of central Montana; mountains of southwestern New Mexico	Warm very dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. flexilis</i> <i>P. tremuloides</i> (NM) <i>P. strobiformis</i> (NM)	<i>A. uva-ursi</i> <i>A. spicatum</i> <i>Festuca</i> spp. <i>B. sagittata</i> <i>Lithospermum</i> <i>rudemale</i>	Pfister et al. 1977 Fitzhugh et al. 1984
<i>Pseudotsuga menziesii</i> / <i>Berberis repens</i> H.T.	Mountains of central and southern Idaho, and Utah, Bighorn Mountains, north- central Wyoming	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. flexilis</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>Abies grandis</i> (Not WY) <i>J. scopulorum</i>	<i>B. repens</i> <i>J. communis</i> <i>P. myrsinites</i> <i>C. geyseri</i> <i>S. oreophilus</i> <i>A. cordifolia</i>	Hoffman and Alex- ander 1976 Mauk and Hender- son 1984 Steele et al. 1981 Youngblood 1984
<i>Pseudotsuga menziesii</i> / <i>Cercocarpus ledifolius</i> H.T.	Mountains of central Idaho and central and southern Utah	Warm dry	Co-climax with (ID) or seral to (UT) <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. flexilis</i> <i>P. tremuloides</i> <i>J. scopulorum</i>	<i>C. ledifolius</i> <i>S. oreophilus</i> <i>A. spicatum</i> <i>B. repens</i>	Steele et al. 1981 Youngblood 1984
<i>Pseudotsuga menziesii</i> / <i>Jamesia americana</i> H.T.	Front Range, north-central Colorado	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>J. scopulorum</i>	<i>J. americana</i> <i>J. communis</i> <i>A. glabrum</i> <i>Fragaria ovalis</i> <i>Potentilla fissa</i>	Hess 1981

Table A1.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. ponderosa</i>	Principal tree associates	Principal understory species	Authority
<i>Pseudotsuga menziesii</i> / <i>Linnaea borealis</i> H.T.	Mountains of central and north- western Montana, and central Idaho	Warm moist to well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>Larix occidentalis</i> <i>P. contorta</i>	<i>L. borealis</i> <i>C. rubescens</i> <i>S. albus</i> <i>Vaccinium globulare</i> <i>A. cordifolia</i>	Pfister et al. 1977 Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of eastern Washington, Idaho, and Mon- tana	Cool moist to well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>L. occidentalis</i> <i>P. contorta</i>	<i>P. malvaceus</i> <i>S. albus</i> <i>H. discolor</i> <i>A. cordifolia</i> <i>B. repens</i> <i>C. geyseri</i> <i>C. rubescens</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977 Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Physocarpus monogynus</i> H.T.	Bighorn Moun- tains north- central Wyoming. Front Range north-central Colorado	Warm well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. contorta</i> <i>J. scopulorum</i> <i>P. flexilis</i>	<i>P. monogynus</i> <i>B. repens</i> <i>S. betulifolia</i> <i>H. kingii</i> <i>G. fremontii</i> <i>P. pratensis</i>	Hess 1981 Hoffman and Alex- ander 1976
<i>Pseudotsuga menziesii</i> / <i>Quercus gambelii</i> H.T.	Mountains of southern Utah, northern New Mexico, and southern Colo- rado	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. strobiformis</i> <i>Abies concolor</i> <i>J. scopulorum</i>	<i>Q. gambelii</i> <i>F. arizonica</i> <i>Muhlenbergia</i> spp. <i>S. oreophilus</i> <i>B. repens</i> <i>P. myrsinites</i>	Alexander et al. 1984a, 1984b, 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Youngblood 1984
<i>Pseudotsuga menziesii</i> / <i>Quercus hypoleucoides</i> H.T.	Mountains of southern Arizona and southwestern New Mexico	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. strobiformis</i> <i>A. concolor</i>	<i>Q. hypoleucoides</i> <i>Quercus rugosa</i> <i>Muhlenbergia</i> <i>longiligula</i>	Moir and Ludwig 1979
<i>Pseudotsuga menziesii</i> / <i>Spiraea betulifolia</i> H.T.	Mountains of cen- tral Montana and central Idaho	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. contorta</i> <i>P. flexilis</i>	<i>S. betulifolia</i> <i>A. alnifolia</i> <i>B. repens</i> <i>A. cordifolia</i> <i>Fragaria virginiana</i> <i>C. rubescens</i>	Pfister et al. 1977 Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Symphoricarpos albus</i> H.T.	Mountains of eastern Washington, northern and cen- tral Idaho, and Montana	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>L. occidentalis</i> <i>P. contorta</i>	<i>S. albus</i> <i>S. betulifolia</i> <i>Rosa</i> spp. <i>C. geyseri</i> <i>C. rubescens</i> <i>P. virginiana</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977 Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Symphoricarpos</i> <i>oreophilus</i> H.T.	Mountains of cen- tral Idaho, and northern and southern Utah	Warm dry	Seral or minor climax to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. flexilis</i> <i>P. tremuloides</i> <i>A. grandis</i> <i>J. scopulorum</i> <i>P. contorta</i>	<i>S. oreophilus</i> <i>Ribes</i> spp. <i>P. virginiana</i> <i>A. tridentata</i> <i>H. kingii</i> <i>Stellaria jamesiana</i> <i>B. repens</i>	Mauk and Hender- son 1984 Steele et al. 1981 Youngblood 1984
<i>Pseudotsuga menziesii</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of northern and cen- tral Idaho, west- central and north- western Montana	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>V. caespitosum</i> <i>C. rubescens</i> <i>C. geyseri</i> <i>L. borealis</i> <i>A. uva-ursi</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Vaccinium globulare</i> H.T.	Mountains of northern and cen- tral Idaho, and north-central Montana	Cool dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>V. globulare</i> <i>A. uva-ursi</i> <i>Xerophyllum tenax</i> <i>C. geyseri</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981

Table A1.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. ponderosa</i>	Principal tree associates	Principal understory species	Authority
<i>Pseudotsuga menziesii</i> / <i>Agropyron spicatum</i> H.T.	Mountains of central Montana, northern and central Idaho	Warm dry	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>A. spicatum</i> <i>F. idahoensis</i> <i>B. sagittata</i> <i>M. bulbosa</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Bromus ciliatus</i> H.T.	Mountains of north-central and northwestern New Mexico	Warm moist	Minor climax to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. strobiformis</i> <i>P. tremuloides</i>	<i>B. ciliatus</i> <i>A. glabrum</i> <i>Carex</i> spp.	Alexander et al. 1984c
<i>Pseudotsuga menziesii</i> / <i>Calamagrostis rubescens</i> H.T.	Mountains of eastern Washington, and Idaho, and Montana	Warm to cool dry to well-drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>P. tremuloides</i>	<i>C. rubescens</i> <i>C. geyeri</i> <i>A. uva-ursi</i> <i>A. cordifolia</i> <i>A. spicatum</i> <i>P. myrsinites</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977 Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Festuca arizonica</i> H.T.	Mountains of New Mexico, Arizona, and southern Colorado	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>Pinus aristata</i> <i>P. strobiformis</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>F. arizonica</i> <i>K. cristata</i> <i>M. montana</i> <i>P. fendleriana</i>	Alexander et al. 1984b, 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Pseudotsuga menziesii</i> / <i>Festuca idahoensis</i> H.T.	Mountains of northern and central Idaho	Warm dry	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i>	<i>F. idahoensis</i> <i>P. virginiana</i> <i>Rosa</i> spp. <i>A. alnifolia</i> <i>A. spicatum</i> <i>C. rubescens</i>	Cooper et al. 1983 Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Festuca scabrella</i> H.T.	Mountains of central and northwestern Montana	Warm dry	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. flexilis</i>	<i>F. scabrella</i> <i>F. idahoensis</i> <i>A. spicatum</i> <i>K. cristata</i> <i>B. sagittata</i>	Pfister et al. 1977
<i>Pseudotsuga menziesii</i> / <i>Muhlenbergia montana</i> H.T.	Mountains of New Mexico and eastern Arizona	Warm dry	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. strobiformis</i> <i>Juniperus</i> spp.	<i>M. montana</i> <i>Q. gambelii</i> <i>P. fendleriana</i> <i>B. repens</i>	Alexander et al. 1984c Fitzhugh et al. 1984
<i>Pseudotsuga menziesii</i> / <i>Muhlenbergia virescens</i> H.T. [<i>P. menziesii</i> - <i>Pinus strobiformis</i> / <i>M. virescens</i> H.T.]	Mountains of New Mexico and northern Arizona	Warm dry	Co-climax with <i>P. menziesii</i> <i>P. strobiformis</i>	<i>P. menziesii</i> <i>Picea pungens</i> <i>P. strobiformis</i> <i>P. tremuloides</i> <i>A. concolor</i>	<i>M. virescens</i> <i>Q. gambelii</i> <i>C. rossii</i> <i>P. fendleriana</i> <i>B. ciliatus</i>	Alexander et al. 1984b Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Pseudotsuga menziesii</i> / <i>Carex geyeri</i> H.T.	Mountains of Montana east of Continental Divide and central Idaho	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>C. geyeri</i> <i>A. uva-ursi</i> <i>A. spicatum</i> <i>A. cordifolia</i> <i>S. oreophilus</i> <i>P. virginiana</i>	Pfister et al. 1977 Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Carex rossii</i> H.T.	Front Range, north-central Colorado	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>J. scopulorum</i>	<i>C. rossii</i> <i>J. communis</i> <i>A. lanulosa</i> <i>Campanula rotundifolia</i> <i>C. fragilis</i>	Hess 1981

Table A1.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. ponderosa</i>	Principal tree associates	Principal understory species	Authority
<i>Pseudotsuga menziesii</i> / <i>Osmorhiza chilensis</i> H.T.	Mountains of cen- tral Idaho	Warm well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i>	<i>O. chilensis</i> <i>C. geyeri</i> <i>C. rubescens</i>	Steele et al. 1981
<i>Pseudotsuga menziesii</i> / Sparse H.T.	Mountains of northern Arizona	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>A. concolor</i> <i>P. strobiformis</i>	<i>B. repens</i> <i>Bromus richardsonii</i> <i>P. fendleriana</i>	Alexander et al. 1984b
<i>Pinus strobiformis</i> series						
<i>Pinus strobiformis</i> / <i>Festuca arizonica</i> H.T.	Mountains of northern Arizona	Warm dry	Seral to <i>P. menziesii</i> <i>P. strobiformis</i>	<i>P. menziesii</i> <i>P. strobiformis</i>	<i>F. arizonica</i> <i>Muhlenbergia</i> spp.	Moir and Ludwig 1979
<i>Abies concolor</i> series						
<i>Abies concolor</i> / <i>Acer glabrum</i> H.T.	Mountains of north-central and northwestern New Mexico	Warm moist	Minor climax to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. strobiformis</i> <i>P. tremuloides</i>	<i>A. glabrum</i> <i>B. repens</i> <i>B. richardsonii</i> <i>Q. gambelii</i> <i>Clematis ligustici-</i> <i>folia</i>	Alexander et al. 1984c Fitzhugh et al. 1984
<i>Abies concolor</i> / <i>Acer grandidentatum</i> H.T.	Mountains of northern Arizona and New Mexico	Cool moist to warm well- drained	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>A. grandidentatum</i> <i>Q. gambelii</i> <i>C. foenea</i>	Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Arctostaphylos patula</i> H.T.	Mountains of southern Utah	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. pungens</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>A. patula</i> <i>J. communis</i> <i>S. oreophilus</i> <i>R. woodsii</i>	Youngblood 1984
<i>Abies concolor</i> / <i>Arctostaphylos uva-ursi</i> H.T.	Mountains of northern New Mexico and southern Colo- rado	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>A. uva-ursi</i> <i>P. myrsinites</i>	DeVelice et al. 1984
<i>Abies concolor</i> / <i>Berberis repens</i> H.T.	Mountains of cen- tral and southern Utah	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. pungens</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>B. repens</i> <i>S. oreophilus</i> <i>P. myrsinites</i> <i>J. communis</i> <i>R. woodsii</i>	Youngblood 1984
<i>Abies concolor</i> / <i>Cercocarpus ledifolius</i> H.T.	Mountains of cen- tral and southern Utah	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>C. ledifolius</i> <i>Q. gambelii</i> <i>A. alnifolia</i> <i>B. repens</i> <i>S. oreophilus</i>	Youngblood 1984
<i>Abies concolor-</i> <i>Quercus gambelii</i> H.T. [<i>A. concolor-</i> <i>Pseudotsuga menziesii</i> / <i>Q. gambelii</i> H.T.]	Mountains of Utah, New Mex- ico, Arizona, and southern Colo- rado	Warm dry	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. strobiformis</i> <i>J. scopulorum</i>	<i>Q. gambelii</i> <i>M. virescens</i> <i>F. arizonica</i> <i>S. oreophilus</i> <i>A. alnifolia</i> <i>B. repens</i> <i>C. rossii</i>	Alexander et al. 1984a, 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979 Youngblood 1984

Table A1.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. ponderosa</i>	Principal tree associates	Principal understory species	Authority
<i>Abies concolor</i> / <i>Robinia neomexicana</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga</i> <i>menziesii</i> / <i>R. neomexicana</i> H.T.]	Mountains of Arizona and southwestern New Mexico	Warm dry	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. strobiformis</i> <i>Picea engel-</i> <i>mannii</i>	<i>R. neomexicana</i> <i>S. oreophilus</i> <i>Q. gambelii</i>	Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Symphoricarpos</i> <i>oreophilus</i> H.T.	Mountains of cen- tral and southern Utah	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>J. scopulorum</i>	<i>S. oreophilus</i> <i>R. woodsii</i> <i>A. alnifolia</i> <i>C. rossii</i> <i>P. fendleriana</i>	Youngblood 1984
<i>Abies concolor</i> / <i>Elymus triticoides</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>E. triticoides</i> H.T.]	Capitan Moun- tains, New Mex- ico	Warm dry	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>E. triticoides</i> <i>B. richardsonii</i>	Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Festuca arizonica</i> H.T.	Mountains of northern New Mexico and eastern Arizona	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>F. arizonica</i> <i>Q. gambelii</i> <i>Muhlenbergia</i> spp. <i>Poa</i> spp.	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Muhlenbergia virescens</i> H.T.	Mountains of eastern Arizona and southwestern New Mexico	Warm dry	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. strobiformis</i>	<i>M. virescens</i> <i>Lupinus</i> spp. <i>P. fendleriana</i> <i>Senecio</i> spp.	Fitzhugh et al. 1984
<i>Abies concolor</i> / <i>Poa fendleriana</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>P. fendleriana</i> H.T.]	White Mountains, Arizona	Warm dry	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. strobiformis</i> <i>P. tremuloides</i>	<i>P. fendleriana</i> <i>Fragaria vesca</i> <i>S. wootonii</i> <i>G. richardsonii</i> <i>Erigeron</i> spp.	Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Carex foenea</i> H.T.	Pinaleno Moun- tains, Arizona	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. strobiformis</i>	<i>C. foenea</i>	Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Erigeron eximius</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>E. superbus</i> H.T.]	Mountains of northern New Mexico and Arizona	Cool moist	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. strobiformis</i> <i>P. pungens</i> <i>P. engelmannii</i>	<i>E. superbus</i> (<i>E. eximius</i>) <i>C. foenea</i> <i>Lathyrus arizonicus</i> <i>P. virginiana</i>	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Lathyrus arizonicus</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>L. arizonicus</i> H.T.]	San Francisco Peaks, Arizona	Cool dry	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>L. arizonicus</i> <i>G. richardsonii</i>	Moir and Ludwig 1979
<i>Abies concolor</i> / Sparse H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> H.T.]	Mountains of New Mexico and southern Colo- rado	Warm dry	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. pungens</i> <i>P. strobiformis</i> <i>P. tremuloides</i>	<i>S. oreophilus</i> <i>R. neomexicana</i> <i>Q. gambelii</i> <i>B. repens</i>	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies grandis</i> series						
<i>Abies grandis</i> / <i>Acer glabrum</i> H.T.	Mountains of cen- tral Idaho	Warm moist	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>Abies lasiocarpa</i> (minor climax) <i>P. menziesii</i>	<i>A. glabrum</i> <i>S. albus</i> <i>P. malvaceus</i> <i>S. betulifolia</i> <i>C. rubescens</i>	Steele et al. 1981

Table A1.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. ponderosa</i>	Principal tree associates	Principal understory species	Authority
<i>Abies grandis</i> / <i>Linnaea borealis</i> H.T.	Mountains of cen- tral and northern Idaho, and south- ern Montana	Warm moist to well- drained	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>A. lasiocarpa</i>	<i>L. borealis</i> <i>X. tenax</i> <i>C. rubescens</i> <i>A. alnifolia</i> <i>A. cordifolia</i> <i>Lupinus</i> spp.	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Abies grandis</i> / <i>Pachistima myrsinites</i> H.T.	Mountains of northern Idaho and eastern Washington	Warm dry to well- drained	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>P. contorta</i>	<i>P. myrsinites</i> <i>Bromus vulgaris</i> <i>Galium triflorum</i> <i>Smilacina stellata</i> <i>Thalictrum occiden- tale</i>	Daubenmire and Daubenmire 1968
<i>Abies grandis</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of northern Idaho	Warm dry	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. menziesii</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>P. malvaceus</i> <i>A. glabrum</i> <i>H. discolor</i> <i>Smilacina racemosa</i>	Cooper et al. 1983
<i>Abies grandis</i> / <i>Spiraea betulifolia</i> H.T.	Mountains of central Idaho	Warm dry	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>S. betulifolia</i> <i>S. albus</i> <i>A. cordifolia</i> <i>C. rubescens</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of central Idaho	Cool moist to well- drained	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> (minor climax) <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>V. caespitosum</i> <i>F. virginiana</i> <i>C. rubescens</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Vaccinium globulare</i> H.T.	Mountains of central Idaho	Warm moist	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> (minor climax) <i>P. menziesii</i> <i>P. contorta</i> <i>P. engelmannii</i> <i>L. occidentalis</i>	<i>V. globulare</i> <i>Lonicera utahensis</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Xerophyllum tenax</i> H.T.	Mountains of northern Idaho and northwestern Montana	Warm dry	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. menziesii</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>X. tenax</i> <i>V. globulare</i> <i>C. rubescens</i> <i>Arnica latifolia</i> <i>P. myrsinites</i>	Cooper et al. 1984 Pfister et al. 1977
<i>Abies grandis</i> / <i>Calamagrostis rubescens</i> H.T.	Mountains of central Idaho	Cool dry	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. contorta</i> <i>P. menziesii</i>	<i>C. rubescens</i> <i>C. geyeri</i> <i>S. betulifolia</i> <i>A. cordifolia</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northern Mon- tana, northern and central Idaho	Warm moist	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> (minor climax) <i>P. menziesii</i> <i>P. engelmannii</i> <i>Pinus monticola</i> <i>L. occidentalis</i> <i>P. contorta</i>	<i>C. uniflora</i> <i>A. glabrum</i> <i>V. globulare</i> <i>L. borealis</i> <i>G. triflorum</i> <i>B. vulgaris</i> <i>P. malvaceus</i> <i>X. tenax</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Abies grandis</i> / <i>Coptis occidentalis</i> H.T.	Mountains of northern Idaho	Warm moist	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. menziesii</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>C. occidentalis</i> <i>P. malvaceus</i> <i>V. globulare</i> <i>X. tenax</i> <i>S. albus</i> <i>H. discolor</i>	Cooper et al. 1983

Table A1.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. ponderosa</i>	Principal tree associates	Principal understory species	Authority
<i>Picea pungens</i> series						
<i>Picea pungens</i> <i>Arctostaphylos uva-ursi</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>A. uva-ursi</i> H.T.]	Mountains of southern Colo- rado and northern New Mexico	Warm dry	Seral to <i>P. pungens</i> <i>P. menziesii</i> <i>A. concolor</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>A. uva-ursi</i> <i>J. communis</i> <i>F. arizonica</i> <i>F. ovalis</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Berberis repens</i> H.T.	Mountains of cen- tral and southern Utah	Cool dry	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>B. repens</i> <i>P. myrsinites</i> <i>J. communis</i> <i>S. oreophilus</i> <i>C. rossii</i>	Youngblood 1984
<i>Picea pungens</i> / <i>Juniperus communis</i> H.T.	Mountains of cen- tral Utah	Warm dry	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>B. repens</i> <i>P. myrsinites</i> <i>S. oreophilus</i>	Youngblood 1984
<i>Picea pungens</i> / <i>Agropyron spicatum</i> H.T.	Uinta Mountains, Utah	Warm dry	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. contorta</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>A. spicatum</i> <i>B. repens</i> <i>J. communis</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984
<i>Picea pungens</i> / <i>Festuca arizonica</i> H.T.	Jemez Moun- tains, northern New Mexico, San Juan Mountains, southwestern Colorado	Warm dry	Seral to <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. tremuloides</i>	<i>F. arizonica</i> <i>C. foenea</i> <i>Erigeron</i> spp. <i>Fragaria</i> spp.	DeVelice et al. 1984
<i>Picea pungens</i> / <i>Poa pratensis</i> H.T.	Mountains of New Mexico	Warm to cool moist	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>A. concolor</i> <i>P. strobiformis</i>	<i>P. pratensis</i> <i>E. superbus</i> (<i>E. eximius</i>) <i>G. richardsonii</i> <i>F. virginiana</i>	Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Carex foenea</i> H.T.	Mountains of northern Arizona and New Mexico	Warm to cool moist	Seral to <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>C. foenea</i> <i>F. arizonica</i> <i>M. montana</i> <i>B. ciliatus</i> <i>Fragaria</i> spp.	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Erigeron eximius</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> / <i>E. superbus</i> H.T.]	White Mountains, Arizona	Cool dry	Seral to <i>P. pungens</i> <i>P. engelmannii</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>A. concolor</i> <i>A. lasiocarpa</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>E. superbus</i> (<i>E. eximius</i>) <i>F. arizonica</i> <i>C. foenea</i> <i>F. virginiana</i>	Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Fragaria ovalis</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>Valeriana acutiloba</i> H.T.]	Mountains of New Mexico and eastern Arizona	Cool moist	Seral to <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. strobiformis</i> <i>P. tremuloides</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>F. ovalis</i> <i>V. acutiloba</i> <i>C. foenea</i> <i>F. arizonica</i> <i>E. superbus</i> (<i>E. eximius</i>)	Alexander et al. 1984a Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Senecio cardamine</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> / <i>S. cardamine</i> H.T.]	Mountains of southwestern New Mexico and southeastern Arizona	Cool moist	Seral to <i>P. pungens</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>P. pungens</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>A. concolor</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>S. cardamine</i> <i>P. aquilinum</i> <i>Helenium hoopesii</i> <i>Viola canadensis</i>	Moir and Ludwig 1979

Table A1.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. ponderosa</i>	Principal tree associates	Principal understory species	Authority
<i>Picea glauca</i> series						
<i>Picea glauca</i> / <i>Linnaea borealis</i> H.T.	Black Hills and Bearlodge Moun- tains, South Dakota and eastern Wyoming	Cool well- drained	Seral to <i>P. glauca</i>	<i>P. glauca</i> <i>P. tremuloides</i> <i>Betula papyrifera</i>	<i>L. borealis</i> <i>S. canadensis</i> <i>Lonicera dioica</i>	Hoffman 1984
<i>Picea glauca</i> / <i>Vaccinium scoparium</i> H.T.	Black Hills and Bearlodge Moun- tains, South Dakota and eastern Wyoming	Cool well- drained	Seral to <i>P. glauca</i>	<i>P. glauca</i> <i>P. tremuloides</i> <i>B. papyrifera</i>	<i>V. scoparium</i> <i>C. tenuiloba</i>	Hoffman 1984
<i>Picea engelmannii</i> series						
<i>Picea engelmannii</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of northwestern Montana	Cool well- drained	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>L. occidentalis</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>V. caespitosum</i> <i>L. borealis</i> <i>V. scoparium</i> <i>C. rubescens</i> <i>Ribes montigenum</i>	Pfister et al. 1977
<i>Picea engelmannii</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northwestern Montana	Warm moist to dry	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>C. uniflora</i> <i>V. caespitosum</i> <i>Aralia nudicaulis</i> <i>Cornus canadensis</i>	Pfister et al. 1977
<i>Picea engelmannii</i> / <i>Galium triflorum</i> H.T.	Mountains of south-central Montana	Cool moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i>	<i>G. triflorum</i> <i>Actaea rubra</i> <i>S. stellata</i> <i>Streptopus amplexi- folius</i>	Pfister et al. 1977
<i>Picea engelmannii</i> / <i>Senecio cardamine</i> H.T.	Blue Mountains, Arizona	Cool moist	Seral to <i>P. engelmannii</i> <i>P. menziesii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. strobiformis</i> <i>P. tremuloides</i> <i>A. lasiocarpa</i> <i>A. concolor</i>	<i>S. cardamine</i> <i>F. ovalis</i> <i>G. richardsonii</i> <i>P. aquilinum</i> <i>V. canadensis</i>	Fitzhugh et al. 1984
<i>Picea engelmannii</i> / <i>Smilacina stellata</i> H.T.	Mountains of Montana east of Continental Divide	Warm moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i>	<i>S. stellata</i> <i>S. racemosa</i> <i>T. occidentale</i>	Pfister et al. 1977
<i>Abies lasiocarpa</i> series						
<i>Abies lasiocarpa</i> / <i>Linnaea borealis</i> H.T.	Mountains of Montana	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. engelmannii</i>	<i>L. borealis</i> <i>A. cordifolia</i> <i>V. scoparium</i> <i>C. rubescens</i>	Pfister et al. 1977
<i>Abies lasiocarpa</i> / <i>Xerophyllum tenax</i> H.T.	Mountains of Montana	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. albicaulis</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. engelmannii</i>	<i>X. tenax</i> <i>Vaccinium</i> <i>membranaceum</i> <i>V. scoparium</i> <i>V. globulare</i>	Pfister et al. 1977
<i>Abies lasiocarpa</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northwestern Montana	Warm moist to cool dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>P. monticola</i>	<i>C. uniflora</i> <i>Menziesia ferruginea</i> <i>V. caespitosum</i> <i>A. nudicaulis</i>	Pfister et al. 1977

Table A2.—Habitat types, community types, and plant communities in which interior *Pseudotsuga menziesii* is climax, co-climax, minor climax, or seral.

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Pseudotsuga menziesii</i> series						
<i>Pseudotsuga menziesii</i> / <i>Acer glabrum</i> H.T.	Mountains of central and eastern Idaho, northwestern Wyoming, and northern Utah	Cool moist	Climax	<i>Abies grandis</i> <i>Populus tremuloides</i> <i>Pinus ponderosa</i> <i>Pinus contorta</i> <i>Pinus flexilis</i> <i>Juniperus scopulorum</i>	<i>A. glabrum</i> <i>Amelanchier alnifolia</i> <i>Prunus virginiana</i> <i>Symphoricarpos oreophilus</i> <i>Ribes cereum</i>	Mauk and Henderson 1984 Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> / <i>Arctostaphylos patula</i> H.T.	Mountains of central and southern Utah	Warm dry	Climax	<i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>A. patula</i> <i>Berberis repens</i> <i>Ceanothus martinii</i> <i>S. oreophilus</i>	Youngblood 1984
<i>Pseudotsuga menziesii</i> / <i>Arctostaphylos uva-ursi</i> H.T.	Mountains of central Montana; mountains of southwestern New Mexico	Warm very dry	Climax	<i>P. ponderosa</i> <i>P. flexilis</i> <i>P. tremuloides</i> (NM) <i>Pinus strobiformis</i> (NM)	<i>A. uva-ursi</i> <i>Agropyron spicatum</i> <i>Festuca</i> spp. <i>Balsamorhiza sagittata</i> <i>Lithospermum ruderales</i>	Fitzhugh et al. 1984 Pfister et al. 1977
<i>Pseudotsuga menziesii</i> / <i>Berberis repens</i> H.T.	Mountains of central and southern Idaho, northwestern Wyoming, and northern Utah; Bighorn Mountains, north-central Wyoming	Warm dry	Climax	<i>P. ponderosa</i> <i>P. flexilis</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>A. grandis</i> (Not WY) <i>J. scopulorum</i>	<i>B. repens</i> <i>Juniperus communis</i> <i>Pachistima myrsinites</i> <i>Carex geyeri</i> <i>S. oreophilus</i> <i>Arnica cordifolia</i>	Hoffman and Alexander 1976 Mauk and Henderson 1984 Steele et al. 1981, 1983 Youngblood 1984
<i>Pseudotsuga menziesii</i> / <i>Cercocarpus ledifolius</i> H.T.	Mountains of eastern and central Idaho, and Utah	Warm dry	Climax or co-climax with <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>A. grandis</i> <i>P. flexilis</i> <i>J. scopulorum</i> <i>P. tremuloides</i>	<i>C. ledifolius</i> <i>S. oreophilus</i> <i>A. spicatum</i> <i>B. sagittata</i> <i>B. repens</i>	Mauk and Henderson 1984 Steele et al. 1981, 1983 Youngblood 1984
<i>Pseudotsuga menziesii</i> / <i>Cercocarpus montanus</i> H.T.	Mountains of central and southern Utah	Warm dry	Climax	<i>Juniperus</i> spp. <i>Pinus edulis</i>	<i>C. montanus</i> <i>S. oreophilus</i> <i>B. repens</i> <i>Shepherdia rotundifolia</i>	Youngblood 1984
<i>Pseudotsuga menziesii</i> / <i>Jamesia americana</i> H.T.	Front Range, north-central Colorado; mountains of western Colorado	Warm dry	Climax	<i>P. ponderosa</i> <i>J. scopulorum</i>	<i>J. americana</i> <i>J. communis</i> <i>A. glabrum</i> <i>Fragaria ovalis</i> <i>Potentilla fissa</i>	Hess 1981 Komarkova 1984
<i>Pseudotsuga menziesii</i> / <i>Juniperus communis</i> H.T.	Mountains of central and southwestern Montana, central Idaho, and northwestern Wyoming	Warm dry	Climax	<i>P. flexilis</i> <i>P. contorta</i> <i>J. scopulorum</i>	<i>J. communis</i> <i>S. oreophilus</i> <i>Shepherdia canadensis</i> <i>A. cordifolia</i> <i>Juniperus horizontalis</i> <i>Astragalus miser</i>	Pfister et al. 1977 Steele et al. 1981, 1983

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Pseudotsuga menziesii</i> / <i>Linnaea borealis</i> H.T.	Mountains of central and north- western Montana, to well- and central Idaho	Warm moist drained	Climax	<i>P. ponderosa</i> <i>Larix occidentalis</i> <i>P. contorta</i>	<i>L. borealis</i> <i>Calamagrostis</i> <i>rubescens</i> <i>Symphoricarpos</i> <i>albus</i> <i>Vaccinium globulare</i> <i>A. cordifolia</i>	Pfister et al. 1977 Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Pachistima myrsinites</i> H.T.	Mountains of western and central Colorado	Warm dry	Climax	<i>P. contorta</i> <i>Picea engel-</i> <i>mannii</i> <i>P. tremuloides</i>	<i>P. myrsinites</i> <i>S. oreophilus</i> <i>A. cordifolia</i> <i>B. repens</i> <i>Vaccinium myrtillus</i> <i>Quercus gambelii</i>	Hess and Wasser 1982 Hoffman and Alex- ander 1980, 1983 Komarkova 1984
<i>Pseudotsuga menziesii</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of eastern Oregon, and Washington, Idaho, Montana, northwestern Wyoming, and Utah	Cool moist to well- drained	Climax	<i>P. ponderosa</i> <i>L. occidentalis</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>A. grandis</i> <i>J. scopulorum</i> <i>P. flexilis</i>	<i>P. malvaceus</i> <i>S. albus</i> <i>Holodiscus discolor</i> <i>A. cordifolia</i> <i>B. repens</i> <i>C. geyeri</i> <i>P. myrsinites</i> <i>A. alnifolia</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981, 1983 Youngblood 1984
<i>Pseudotsuga menziesii</i> / <i>Physocarpus monogynus</i> H.T.	Bighorn Moun- tains, north- central Wyoming; Front Range, north-central Colorado	Warm well- drained	Climax	<i>P. contorta</i> <i>J. scopulorum</i> <i>P. ponderosa</i> <i>P. flexilis</i>	<i>P. monogynus</i> <i>B. repens</i> <i>Spiraea betulifolia</i> <i>Hesperochloa kingii</i> <i>Geranium fremontii</i> <i>Poa pratensis</i>	Hess 1981 Hoffman and Alex- ander 1976
<i>Pseudotsuga menziesii</i> / <i>Quercus gambelii</i> H.T.	Mountains of southern Utah, New Mexico, Arizona, and southern Colo- rado	Warm dry	Climax	<i>P. ponderosa</i> <i>P. strobiformis</i> <i>Abies concolor</i> (AZ) <i>J. scopulorum</i>	<i>Q. gambelii</i> <i>Festuca arizonica</i> <i>S. oreophilus</i> <i>Muhlenbergia</i> <i>virescens</i> <i>Holodiscus dumosus</i> <i>B. repens</i> <i>P. myrsinites</i> <i>A. glabrum</i>	Alexander et al. 1984a, 1984b, 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Youngblood 1984
<i>Pseudotsuga menziesii</i> / <i>Quercus hypoleucoides</i> H.T.	Mountains of southern Arizona and southwestern New Mexico	Warm dry	Climax	<i>P. ponderosa</i> <i>P. strobiformis</i> <i>A. concolor</i>	<i>Q. hypoleucoides</i> <i>Quercus rugosa</i> <i>Muhlenbergia</i> <i>longiligula</i>	Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Pseudotsuga menziesii</i> / <i>Spiraea betulifolia</i> H.T.	Mountains of central Montana, central and eastern Idaho, and northwestern Wyoming	Warm dry	Climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>P. flexilis</i>	<i>S. betulifolia</i> <i>A. alnifolia</i> <i>B. repens</i> <i>A. cordifolia</i> <i>Fragaria virginiana</i> <i>C. rubescens</i>	Pfister et al. 1977 Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> / <i>Symphoricarpos albus</i> H.T.	Mountains of eastern Washington, Idaho, Montana, and northwestern Wyoming	Warm dry	Climax	<i>P. ponderosa</i> <i>L. occidentalis</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>S. albus</i> <i>S. betulifolia</i> <i>Rosa</i> spp. <i>C. geyeri</i> <i>C. rubescens</i> <i>P. virginiana</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977 Steele et al. 1981, 1983

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Pseudotsuga menziesii</i> / <i>Symphoricarpos</i> <i>oreophilus</i> H.T.	Mountains of central Idaho, southwestern Montana, north- ern and southern Utah, north- western Wyo- ming, and western and central Colorado	Warm dry	Climax	<i>P. ponderosa</i> <i>P. flexilis</i> <i>P. tremuloides</i> <i>A. grandis</i> <i>J. scopulorum</i> <i>P. contorta</i>	<i>S. oreophilus</i> <i>Ribes</i> spp. <i>P. virginiana</i> <i>Artemesia tridentata</i> <i>H. kingii</i> <i>Stellaria jamesiana</i> <i>C. geyeri</i> <i>B. repens</i>	Hess and Wasser 1982 Komarkova 1984 Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981, 1983 Youngblood 1984
<i>Pseudotsuga menziesii</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of northern and central Idaho, west-central and northwestern Montana	Warm moist	Climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>V. caespitosum</i> <i>C. rubescens</i> <i>C. geyeri</i> <i>L. borealis</i> <i>A. uva-ursi</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Vaccinium globulare</i> H.T.	Mountains of north-central Montana, north- ern, central and eastern Idaho	Cool dry	Climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>V. globulare</i> <i>A. uva-ursi</i> <i>Xerophyllum tenax</i> <i>C. geyeri</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> / <i>Agropyron spicatum</i> H.T.	Mountains of central Montana, northern and central Idaho	Warm dry	Co-climax with <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>A. spicatum</i> <i>Festuca idahoensis</i> <i>B. sagittata</i> <i>Melica bulbosa</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Bromus ciliatus</i> H.T.	Mountains of New Mexico	Warm moist	Climax	<i>P. ponderosa</i> (minor climax) <i>P. strobiformis</i> <i>P. tremuloides</i>	<i>B. ciliatus</i> <i>F. arizonica</i> <i>Poa fendleriana</i> <i>A. glabrum</i>	Alexander et al. 1984c Fitzhugh et al. 1984
<i>Pseudotsuga menziesii</i> / <i>Calamagrostis rubescens</i> H.T.	Mountains of eastern Washington, Idaho, Montana, and northwestern Wyoming	Warm to cool dry to well- drained	Climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>C. rubescens</i> <i>C. geyeri</i> <i>A. uva-ursi</i> <i>A. cordifolia</i> <i>A. spicatum</i> <i>P. myrsinites</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> / <i>Festuca arizonica</i> H.T.	Mountains of New Mexico, Arizona, and southern Colo- rado	Warm dry	Climax	<i>P. ponderosa</i> <i>P. strobiformis</i> <i>Pinus aristata</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>F. arizonica</i> <i>Muhlenbergia</i> <i>montana</i> <i>Koeleria cristata</i> <i>P. fendleriana</i> <i>Q. gambelii</i>	Alexander et al. 1984b, 1984c DeVilice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Pseudotsuga menziesii</i> / <i>Festuca idahoensis</i> H.T.	Mountains of southwestern Montana, north- ern and central Idaho	Warm dry	Co-climax with <i>P. ponderosa</i>	<i>P. ponderosa</i>	<i>F. idahoensis</i> <i>P. virginiana</i> <i>Rosa</i> spp. <i>A. alnifolia</i> <i>A. spicatum</i> <i>C. rubescens</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Festuca scabrella</i> H.T.	Mountains of central and north- western Montana	Warm dry	Co-climax with <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>P. flexilis</i>	<i>F. scabrella</i> <i>F. idahoensis</i> <i>A. spicatum</i> <i>K. cristata</i> <i>B. sagittata</i>	Pfister et al. 1977

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Pseudotsuga menziesii</i> / <i>Muhlenbergia montana</i> H.T.	Mountains of New Mexico and eastern Arizona	Warm dry	Co-climax with <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>P. strobiformis</i> <i>Juniperus</i> spp.	<i>M. montana</i> <i>Q. gambelii</i> <i>P. fendleriana</i> <i>B. repens</i>	Alexander et al. 1984c Fitzhugh et al. 1984
<i>Pseudotsuga menziesii</i> / <i>Muhlenbergia virescens</i> H.T. [<i>P. menziesii</i> - <i>Pinus strobiformis</i> / <i>M. virescens</i> H.T.]	Mountains of New Mexico and northern Arizona	Warm dry	Co-climax with <i>P. ponderosa</i> <i>P. strobiformis</i>	<i>P. ponderosa</i> <i>P. strobiformis</i> <i>Picea pungens</i> <i>P. tremuloides</i> <i>A. concolor</i>	<i>M. virescens</i> <i>Q. gambelii</i> <i>Carex rossii</i> <i>P. fendleriana</i> <i>B. ciliatus</i>	Alexander et al. 1984b Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Pseudotsuga menziesii</i> / <i>Carex geyeri</i> H.T.	Mountains of Montana east of Continental Divide and central Idaho; mountains of western and central Colorado	Warm dry	Climax	<i>P. ponderosa</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>J. scopulorum</i>	<i>C. geyeri</i> <i>A. uva-ursi</i> <i>A. spicatum</i> <i>A. cordifolia</i> <i>S. oreophilus</i> <i>P. virginiana</i>	Hess 1981 Komarkova 1984 Pfister et al. 1977 Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Carex rossii</i> H.T.	Front Range of north-central Colorado	Warm dry	Climax	<i>P. ponderosa</i> <i>J. scopulorum</i>	<i>C. rossii</i> <i>J. communis</i> <i>Achillea lanulosa</i> <i>Campanula rotundi-</i> <i>folia</i> <i>Cystopteris fragilis</i>	Hess 1981
<i>Pseudotsuga menziesii</i> / <i>Arnica cordifolia</i> H.T.	Mountains of central and southwestern Montana, eastern and central Idaho, and northwestern Wyoming	Cool to warm dry	Climax	<i>P. flexilis</i> <i>P. contorta</i>	<i>A. cordifolia</i> <i>A. miser</i> <i>S. oreophilus</i> <i>Poa nervosa</i> <i>J. communis</i>	Pfister et al. 1977 Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> / <i>Holodiscus dumosus</i> H.T. (Scree Forest) [<i>P. menziesii</i> / <i>Physocarpus monogynus</i> H.T.]	Mountains of New Mexico and southern Colo- rado	Warm dry to well- drained	Climax	<i>Abies lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. strobiformis</i> <i>P. pungens</i> <i>A. concolor</i>	<i>H. dumosus</i> <i>Salix</i> spp. <i>P. monogynus</i> <i>S. oreophilus</i> <i>B. ciliatus</i>	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Pseudotsuga menziesii</i> / <i>Osmorhiza chilensis</i> H.T.	Mountains of central and southern Idaho, and northern Utah	Warm well- drained	Climax	<i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. contorta</i> <i>A. grandis</i> <i>J. scopulorum</i>	<i>O. chilensis</i> <i>Smilacina racemosa</i> <i>Viola nuttallii</i> <i>P. virginiana</i> <i>A. cordifolia</i> <i>C. rubescens</i>	Mauk and Hender- son 1984 Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> / Sparse H.T.	Mountains of northern Arizona	Warm dry	Climax	<i>P. ponderosa</i> <i>A. concolor</i> <i>P. strobiformis</i>	<i>B. repens</i> <i>Bromus richardsonii</i> <i>P. fendleriana</i>	Alexander et al. 1984b
<i>Pinus flexilis</i> series						
<i>Pinus flexilis</i> / <i>Arctostaphylos uva-ursi</i> H.T.	Mountains of northern New Mexico and southern Colo- rado	Warm dry	Co-climax with <i>P. flexilis</i>	<i>P. flexilis</i> <i>P. engelmannii</i> (minor climax) <i>P. tremuloides</i>	<i>A. uva-ursi</i> <i>J. communis</i>	DeVelice et al. 1984

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus flexilis</i> / <i>Berberis repens</i> H.T.	Mountains of northern Utah	Warm dry	Minor climax to <i>P. flexilis</i>	<i>P. flexilis</i> <i>J. scopulorum</i>	<i>B. repens</i> <i>P. myrsinites</i> <i>S. oreophilus</i> <i>A. spicatum</i> <i>P. virginiana</i>	Mauk and Hender- son 1984
<i>Pinus flexilis</i> / <i>Cercocarpus ledifolius</i> H.T.	Mountains of eastern Idaho and northern Utah	Warm dry	Co-climax with or minor climax to <i>P. flexilis</i>	<i>P. flexilis</i> <i>J. scopulorum</i>	<i>C. ledifolius</i> <i>B. repens</i> <i>S. oreophilus</i> <i>B. sagittata</i> <i>A. spicatum</i> <i>H. kingii</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Pinus flexilis</i> / <i>Juniperus communis</i> H.T.	Mountains of Montana and nor- thwestern Wyo- ming; Front Range, north-central Colorado	Warm dry	Minor climax to <i>P. flexilis</i>	<i>P. flexilis</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>Calamagrostis</i> <i>purpurascens</i> <i>C. rossii</i> <i>A. cordifolia</i> <i>S. canadensis</i>	Hess 1981 Pfister et al. 1977 Steele et al. 1983
<i>Pinus flexilis</i> / <i>Festuca idahoensis</i> H.T.	Mountains of southwestern Montana, central Idaho, and north- western Wyoming	Warm dry	Co-climax with <i>P. flexilis</i>	<i>P. flexilis</i> <i>J. scopulorum</i>	<i>F. idahoensis</i> <i>F. scabrella</i> <i>A. spicatum</i> <i>B. sagittata</i> <i>H. kingii</i> <i>A. tridentata</i>	Pfister et al. 1977 Steele et al. 1981, 1983
<i>Pinus flexilis</i> / <i>Hesperochloa kingii</i> H.T.	Mountains of northwestern Wyoming	Warm dry	Co-climax with <i>P. flexilis</i>	<i>P. flexilis</i> <i>J. scopulorum</i>	<i>H. kingii</i> <i>A. spicatum</i> <i>C. rossii</i> <i>A. miser</i> <i>B. sagittata</i>	Steele et al. 1983
<i>Pinus flexilis</i> - <i>Pinus longaeva</i> H.T.	Mountains of central and southern Utah	Warm dry	Seral to <i>P. flexilis</i> <i>P. longaeva</i>	<i>P. flexilis</i> <i>P. longaeva</i> <i>P. tremuloides</i> <i>J. scopulorum</i>	<i>S. oreophilus</i> <i>J. communis</i> <i>B. repens</i> <i>C. rossii</i> <i>A. miser</i>	Youngblood 1984
<i>Pinus ponderosa</i> series						
<i>Pinus ponderosa</i> / <i>Arctostaphylos uva-ursi</i> H.T.	Mountains of northern New Mexico and southern Colo- rado	Warm dry	Minor climax to <i>P. ponderosa</i>	<i>P. ponderosa</i>	<i>A. uva-ursi</i> <i>F. arizonica</i> <i>M. montana</i>	DeVelice et al. 1984
<i>Pinus ponderosa</i> / <i>Quercus gambelii</i> H.T.	Mountains of western and central Colorado	Warm dry	Minor climax to <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>J. scopulorum</i>	<i>Q. gambelii</i> <i>C. geyeri</i> <i>S. oreophilus</i> <i>J. communis</i> <i>B. repens</i> <i>Rosa woodsii</i>	Hess and Wasser 1982
<i>Pinus ponderosa</i> / <i>Hesperochloa kingii</i> H.T.	Mountains of southern Wyo- ming and north- central Colorado	Warm dry	Minor climax to <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>P. flexilis</i>	<i>H. kingii</i> <i>Artemisia frigida</i> <i>R. cereum</i> <i>Geranium</i> <i>richardsonii</i> <i>Sedum stenopetalum</i> <i>Allium geyeri</i>	Hess 1981

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus ponderosa</i> / <i>Muhlenbergia montana</i> H.T.	Front Range, north-central Colorado; moun- tains of eastern Arizona and southwestern New Mexico	Warm very dry	Seral to <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>J. scopulorum</i> <i>P. edulis</i> <i>Juniperus dep- peana</i>	<i>M. montana</i> <i>Agropyron griffithsii</i> <i>H. kingii</i> <i>Muhlenbergia</i> <i>filiculmis</i> <i>A. lanulosa</i> <i>G. fremontii</i>	Fitzhugh et al. 1984 Hess 1981
<i>Pinus ponderosa</i> / Scree H.T. [<i>P. ponderosa</i> / Rockland H.T.]	Mountains of eastern Arizona and southwestern New Mexico	Warm dry	Minor climax to <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>P. strobiformis</i>	<i>Quercus</i> spp. <i>Muhlenbergia</i> spp. <i>F. arizonica</i>	Fitzhugh et al. 1984
<i>Pinus strobiformis</i> series						
<i>Pinus strobiformis</i> / <i>Festuca arizonica</i> H.T.	Mountains of northern Arizona	Warm dry	Co-climax with <i>P. strobiformis</i>	<i>P. strobiformis</i> <i>P. ponderosa</i>	<i>F. arizonica</i> <i>Muhlenbergia</i> spp.	Moir and Ludwig 1979
<i>Pinus aristata</i> series						
<i>Pinus aristata</i> / <i>Festuca arizonica</i> H.T.	Sangre de Cristo Mountains, New Mexico	Warm dry	Co-climax with <i>P. aristata</i>	<i>P. aristata</i> <i>P. tremuloides</i>	<i>F. arizonica</i> <i>K. cristata</i> <i>M. montana</i> <i>P. fendleriana</i>	DeVelice et al. 1984
<i>Abies concolor</i> series						
<i>Abies concolor</i> <i>Acer glabrum</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>A. glabrum</i> H.T.]	Mountains of southern Utah, New Mexico, Arizona, and southern Colorado	Warm moist to well- drained	Co-climax with <i>A. concolor</i>	<i>A. concolor</i> <i>P. tremuloides</i> <i>P. strobiformis</i> <i>P. pungens</i> <i>P. engelmannii</i> <i>P. ponderosa</i> (NM) <i>A. lasiocarpa</i>	<i>A. glabrum</i> <i>B. repens</i> <i>Q. gambelii</i> <i>H. dumosus</i> <i>P. myrsinites</i> <i>P. virginiana</i> <i>A. alnifolia</i>	Alexander et al. 1984a, 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979 Youngblood 1984
<i>Abies concolor</i> / <i>Acer grandidentatum</i> H.T.	Mountains of Arizona and New Mexico	Cool moist	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. ponderosa</i> (AZ) <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>A. grandidentatum</i> <i>Q. gambelii</i> <i>Carex foenea</i> <i>H. dumosus</i>	Alexander et al. 1984a Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Arctostaphylos patula</i> H.T.	Mountains of southern Utah	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. pungens</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>A. patula</i> <i>J. communis</i> <i>S. oreophilus</i> <i>R. woodsii</i>	Youngblood 1984
<i>Abies concolor</i> / <i>Arctostaphylos uva-ursi</i> H.T.	Mountains of northern New Mexico and southern Colo- rado	Warm dry	Co-climax with <i>A. concolor</i>	<i>A. concolor</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>A. uva-ursi</i> <i>P. myrsinites</i>	DeVelice et al. 1984

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Abies concolor</i> / <i>Berberis repens</i> H.T.	Mountains of northern Utah	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. contorta</i> <i>P. flexilis</i> <i>A. grandis</i> <i>P. tremuloides</i> <i>P. ponderosa</i> <i>P. pungens</i>	<i>B. repens</i> <i>S. oreophilus</i> <i>Osmorhiza</i> spp. <i>Lathyrus leucanthus</i> <i>J. communis</i> <i>R. woodsii</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984 Youngblood 1984
<i>Abies concolor</i> / <i>Cercocarpus ledifolius</i> H.T.	Mountains of central and southern Utah	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>C. ledifolius</i> <i>Q. gambelii</i> <i>A. alnifolia</i> <i>B. repens</i> <i>S. oreophilus</i>	Youngblood 1984
<i>Abies concolor</i> / <i>Juglans major</i> H.T.	Mountains of southern New Mexico	Warm moist	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>Populus angusti- folia</i> <i>Fraxinus</i> <i>pennsylvanica</i> <i>P. tremuloides</i>	<i>J. major</i> <i>Q. gambelii</i> <i>P. pratensis</i> <i>Vitis arizonica</i>	Alexander et al. 1984a Fitzhugh et al. 1984
<i>Abies concolor</i> / <i>Juniperus communis</i> H.T.	Mountains of southern Utah	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. pungens</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>J. communis</i> <i>S. oreophilus</i> <i>R. woodsii</i> <i>C. rossii</i> <i>B. repens</i>	Youngblood 1984
<i>Abies concolor</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of Utah	Warm moist	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. tremuloides</i> <i>A. grandis</i> <i>J. scopulorum</i>	<i>P. malvaceus</i> <i>Mitella stauropetala</i> <i>S. racemosa</i> <i>A. alnifolia</i> <i>S. oreophilus</i>	Mauk and Hender- son 1984 Youngblood 1984
<i>Abies concolor</i> / <i>Quercus gambelii</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Q. gambelii</i> H.T.]	Mountains of Utah, New Mex- ico, Arizona, and southern Colo- rado	Warm dry	Co-climax with <i>A. concolor</i>	<i>A. concolor</i> <i>P. tremuloides</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>J. scopulorum</i>	<i>Q. gambelii</i> <i>M. virescens</i> <i>F. arizonica</i> <i>S. oreophilus</i> <i>A. alnifolia</i> <i>B. repens</i> <i>C. rossii</i>	Alexander et al. 1984a, 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979 Youngblood 1984
<i>Abies concolor</i> / <i>Robinia neomexicana</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>R. neomexicana</i> H.T.]	Mountains of New Mexico and Arizona	Warm dry	Co-climax with or seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. engelmannii</i> <i>P. strobiformis</i>	<i>R. neomexicana</i> <i>S. oreophilus</i> <i>Q. gambelii</i>	Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Symphoricarpos</i> <i>oreophilus</i> H.T.	Mountains of central and southern Utah	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>J. scopulorum</i>	<i>S. oreophilus</i> <i>R. woodsii</i> <i>A. alnifolia</i> <i>C. rossii</i> <i>P. fendleriana</i>	Youngblood 1984
<i>Abies concolor</i> / <i>Vaccinium myrtillus</i> H.T.	Mountains of northern New Mexico and southern Colo- rado	Cool dry	Co-climax with <i>A. concolor</i>	<i>A. concolor</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. pungens</i> <i>P. tremuloides</i>	<i>V. myrtillus</i> <i>A. uva-ursi</i> <i>P. myrsinites</i> <i>A. glabrum</i> <i>Rubus parviflorus</i>	DeVelice et al. 1984
<i>Abies concolor</i> / <i>Elymus triticoides</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>E. triticoides</i> H.T.]	Capitan Mountains, New Mexico	Warm dry	Co-climax with <i>A. concolor</i>	<i>A. concolor</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>E. triticoides</i> <i>B. richardsonii</i>	Alexander et al. 1984a Moir and Ludwig 1979

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Abies concolor</i> / <i>Festuca arizonica</i> H.T.	Mountains of northern New Mexico	Warm dry	Co-climax with or seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>F. arizonica</i> <i>Q. gambelii</i> <i>Muhlenbergia</i> spp. <i>Poa</i> spp.	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Muhlenbergia virescens</i> H.T.	Mountains of eastern Arizona and southwestern New Mexico	Warm dry	Co-climax with <i>A. concolor</i>	<i>A. concolor</i> <i>P. ponderosa</i> <i>P. strobiformis</i>	<i>M. virescens</i> <i>Lupinus</i> spp. <i>P. fendleriana</i> <i>Senecio</i> spp.	Fitzhugh et al. 1984
<i>Abies concolor</i> / <i>Poa fendleriana</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>P. fendleriana</i> H.T.]	White Mountains, Arizona	Warm dry	Co-climax with <i>A. concolor</i>	<i>A. concolor</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>P. tremuloides</i>	<i>P. fendleriana</i> <i>Fragaria vesca</i> <i>Senecio wootonii</i> <i>A. lanulosa</i> <i>G. richardsonii</i> <i>Erigeron</i> spp.	Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Carex foenea</i> H.T.	Pinaleno Moun- tains, Arizona	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. ponderosa</i> <i>P. strobiformis</i>	<i>C. foenea</i>	Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Erigeron eximius</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>E. superbis</i> H.T.]	Mountains of New Mexico and Arizona	Cool moist	Co-climax with <i>A. concolor</i>	<i>A. concolor</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. pungens</i> <i>P. engelmannii</i> <i>P. strobiformis</i>	<i>E. superbis</i> (<i>E. eximius</i>) <i>C. foenea</i> <i>Lathyrus arizonicus</i> <i>P. virginiana</i>	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Lathyrus arizonicus</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>L. arizonicus</i> H.T.]	San Francisco Peaks, Arizona	Cool dry	Co-climax with <i>A. concolor</i>	<i>A. concolor</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>L. arizonicus</i> <i>G. richardsonii</i>	Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Osmorhiza chilensis</i> H.T.	Wasatch Moun- tains, Utah	Warm moist	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. tremuloides</i> <i>P. engelmannii</i> <i>A. grandis</i>	<i>O. chilensis</i> <i>P. malvaceus</i> <i>P. myrsinites</i> <i>P. virginiana</i>	Mauk and Hender- son 1984
<i>Abies concolor</i> / Scree H.T.	Mountains of southern Colo- rado and northern New Mexico	Cool dry	Co-climax with <i>A. concolor</i>	<i>A. concolor</i> <i>P. strobiformis</i>	<i>B. ciliatus</i> <i>J. americana</i> <i>K. cristata</i>	DeVelice et al. 1984 Fitzhugh et al. 1984
<i>Abies concolor</i> / Sparse H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> H.T.]	Mountains of New Mexico, Arizona, and southern Colo- rado	Warm dry	Co-climax with <i>A. concolor</i>	<i>A. concolor</i> <i>P. tremuloides</i> <i>P. pungens</i> <i>P. ponderosa</i> <i>P. strobiformis</i>	<i>S. oreophilus</i> <i>R. neomexicana</i> <i>Q. gambelii</i> <i>B. repens</i>	Alexander et al. 1984a DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies grandis</i> series						
<i>Abies grandis</i> / <i>Acer glabrum</i> H.T.	Mountains of central Idaho	Warm moist	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> (minor climax) <i>P. ponderosa</i>	<i>A. glabrum</i> <i>S. albus</i> <i>P. malvaceus</i> <i>S. betulifolia</i> <i>C. rubescens</i>	Steele et al. 1981

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Abies grandis</i> / <i>Linnaea borealis</i> H.T.	Mountains of central and north- ern Idaho, and southern Mon- tana	Warm moist to well- drained	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. ponderosa</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>L. borealis</i> <i>X. tenax</i> <i>C. rubescens</i> <i>A. alnifolia</i> <i>A. cordifolia</i> <i>Lupinus</i> spp.	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Abies grandis</i> / <i>Pachistima myrsinites</i> H.T.	Mountains of northern Idaho and eastern Washington	Warm dry to well- drained	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. ponderosa</i> <i>L. occidentalis</i> <i>P. contorta</i>	<i>P. myrsinites</i> <i>Bromus vulgaris</i> <i>Galium triflorum</i> <i>Smilacina stellata</i> <i>Thalictrum occiden- tale</i>	Daubenmire and Daubenmire 1968
<i>Abies grandis</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of northern Idaho	Warm dry	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. ponderosa</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>P. malvaceus</i> <i>A. glabrum</i> <i>H. discolor</i> <i>S. racemosa</i>	Cooper et al. 1983
<i>Abies grandis</i> / <i>Spiraea betulifolia</i> H.T.	Mountains of central Idaho	Warm dry	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>S. betulifolia</i> <i>S. albus</i> <i>A. cordifolia</i> <i>C. rubescens</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of central Idaho	Cool moist to well- drained	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. ponderosa</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>V. caespitosum</i> <i>F. virginiana</i> <i>C. rubescens</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Vaccinium globulare</i> H.T.	Mountains of central Idaho	Warm moist	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. ponderosa</i> <i>P. contorta</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>L. occidentalis</i>	<i>V. globulare</i> <i>Lonicera utahensis</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Xerophyllum tenax</i> H.T.	Mountains of northern Idaho and northwestern Montana	Warm dry	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. ponderosa</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>X. tenax</i> <i>V. globulare</i> <i>C. rubescens</i> <i>Arnica latifolia</i> <i>P. myrsinites</i>	Cooper et al. 1983 Pfister et al. 1977
<i>Abies grandis</i> / <i>Calamagrostis rubescens</i> H.T.	Mountains of central Idaho	Cool dry	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>L. occidentalis</i>	<i>C. rubescens</i> <i>C. geyseri</i> <i>S. betulifolia</i> <i>A. cordifolia</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northern Mon- tana, and north- ern and central Idaho	Warm moist	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> <i>P. ponderosa</i> <i>P. engelmannii</i> <i>Pinus monticola</i> <i>L. occidentalis</i> <i>P. contorta</i>	<i>C. uniflora</i> <i>A. glabrum</i> <i>V. globulare</i> <i>L. borealis</i> <i>G. triflorum</i> <i>Bromus vulgaris</i> <i>P. malvaceus</i> <i>X. tenax</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Abies grandis</i> / <i>Coptis occidentalis</i> H.T.	Mountains of northern Idaho	Warm moist	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. ponderosa</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>C. occidentalis</i> <i>P. malvaceus</i> <i>V. globulare</i> <i>X. tenax</i> <i>S. albus</i> <i>H. discolor</i>	Cooper et al. 1983

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Abies grandis</i> / <i>Senecio triangularis</i> H.T.	Mountains of northern Idaho	Warm moist	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>L. occidentalis</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>S. triangularis</i> <i>Athyrium felix- femina</i> <i>Trautvettera carolinensis</i>	Cooper et al. 1983
<i>Thuja plicata</i> series						
<i>Thuja plicata</i> / <i>Oplopanax horridum</i> H.T.	Mountains of Montana	Cool moist	Seral to <i>T. plicata</i> <i>P. engelmannii</i>	<i>T. plicata</i> <i>P. engelmannii</i> <i>Tsuga hetero- phylla</i> <i>P. monticola</i> <i>Tsuga merten- siana</i>	<i>O. horridum</i> <i>A. felix-femina</i> <i>Dryopteris dilatata</i>	Pfister et al. 1977
<i>Thuja plicata</i> / <i>Pachistima myrsinites</i> H.T.	Mountains of northern Idaho, and eastern Washington and Oregon	Warm dry to well- drained	Seral to <i>T. plicata</i>	<i>T. plicata</i> <i>P. monticola</i> <i>L. occidentalis</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>A. grandis</i>	<i>P. myrsinites</i> <i>A. glabrum</i> <i>G. triflorum</i>	Daubenmire and Daubenmire 1968
<i>Thuja plicata</i> / <i>Athyrium felix-femina</i> H.T.	Mountains of northern Idaho, and eastern Washington and Oregon	Cool wet	Seral to <i>T. plicata</i>	<i>T. plicata</i> <i>P. monticola</i> <i>A. grandis</i> <i>P. engelmannii</i>	<i>A. felix-femina</i> <i>G. triflorum</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968
<i>Thuja plicata</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northern Idaho and northwestern Montana	Cool to warm moist	Seral to <i>T. plicata</i>	<i>T. plicata</i> <i>A. lasiocarpa</i> <i>A. grandis</i> <i>P. engelmannii</i> <i>L. occidentalis</i> <i>P. contorta</i>	<i>C. uniflora</i> <i>Aralia nudicaulis</i> <i>Menziesia ferruginea</i> <i>X. tenax</i> <i>Asarum caudatum</i>	Cooper et al. 1983 Pfister et al. 1977
<i>Picea pungens</i> series						
<i>Picea pungens</i> / <i>Amelanchier alnifolia</i> H.T.	Mountains of western and central Colorado	Warm moist	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>A. lasiocarpa</i> <i>P. angustifolia</i>	<i>A. alnifolia</i> <i>Cornus stolonifera</i> <i>C. geyeri</i> <i>Swida sericea</i>	Hess and Wasser 1982 Komarkova 1984
<i>Picea pungens</i> / <i>Arctostaphylos uva-ursi</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>A. uva-ursi</i> H.T.]	Mountains of northern New Mexico and southern Colo- rado	Warm dry	Co-climax with <i>P. pungens</i> <i>A. concolor</i>	<i>P. pungens</i> <i>A. concolor</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>A. uva-ursi</i> <i>J. communis</i> <i>F. arizonica</i> <i>F. ovalis</i>	DeVilce et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Berberis repens</i> H.T.	Mountains of Utah	Cool dry	Minor climax to <i>P. pungens</i>	<i>P. pungens</i> <i>P. tremuloides</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>J. scopulorum</i> <i>P. flexilis</i>	<i>B. repens</i> <i>J. communis</i> <i>P. myrsinites</i> <i>Aquilegia caerulea</i> <i>Pyrola secunda</i> <i>Ribes montigenum</i> <i>S. oreophilus</i>	Mauk and Hender- son 1984 Pfister 1972 Youngblood 1984
<i>Picea pungens</i> / <i>Cornus stolonifera</i> H.T.	Mountains of north-central and northwestern New Mexico	Warm moist	Co-climax with <i>P. pungens</i>	<i>P. pungens</i> <i>P. tremuloides</i> <i>Juniperus</i> spp.	<i>C. stolonifera</i> <i>B. repens</i> <i>P. myrsinites</i> <i>C. foenea</i>	Alexander et al. 1984c
<i>Picea pungens</i> / <i>Juniperus communis</i> H.T.	Mountains of central Utah	Cool dry	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. tremuloides</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>S. oreophilus</i> <i>B. repens</i> <i>P. myrsinites</i>	Youngblood 1984

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Picea pungens</i> / <i>Linnaea borealis</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>L. borealis</i> H.T.]	Sangre de Cristo Mountains, south- ern Colorado and northern New Mexico	Cool well- drained	Co-climax with <i>P. pungens</i> <i>A. concolor</i>	<i>P. pungens</i> <i>A. concolor</i> <i>P. tremuloides</i> <i>P. flexilis</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>L. borealis</i> <i>P. myrsinites</i> <i>V. myrtilus</i> <i>R. parviflorus</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Agropyron spicatum</i> H.T.	Uinta Mountains, Utah	Warm dry	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. tremuloides</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>A. spicatum</i> <i>B. repens</i> <i>J. communis</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984
<i>Picea pungens</i> / <i>Festuca arizonica</i> H.T.	Jemez Moun- tains, New Mex- ico; San Juan Mountains, Colo- rado	Warm dry	Co-climax with <i>P. pungens</i>	<i>P. pungens</i> <i>A. concolor</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>F. arizonica</i> <i>C. foenea</i> <i>Erigeron</i> spp. <i>Fragaria</i> spp.	DeVelice et al. 1984
<i>Picea pungens</i> / <i>Poa pratensis</i> H.T.	Mountains of New Mexico	Warm to cool moist	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>A. concolor</i> <i>P. strobiformis</i>	<i>P. pratensis</i> <i>E. superbus</i> (<i>E. eximius</i>) <i>G. richardsonii</i> <i>F. virginiana</i>	Fitzhugh et al. 1983 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Carex foenea</i> H.T.	White Mountains, Kaibab Plateau, Arizona; Jemez Mountains of northern New Mexico	Warm to cool moist	Co-climax with <i>P. pungens</i> <i>P. ponderosa</i>	<i>P. pungens</i> <i>P. ponderosa</i> <i>A. concolor</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>C. foenea</i> <i>F. arizonica</i> <i>M. montana</i> <i>B. ciliatus</i> <i>Fragaria</i> spp.	Alexander et al. 1984c DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Arnica cordifolia</i> H.T.	Front Range, north-central Colorado	Cool moist	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. tremuloides</i>	<i>A. cordifolia</i> <i>S. stellata</i> <i>J. communis</i>	Hess 1981
<i>Picea pungens</i> / <i>Equisetum arvense</i> H.T.	Mountains of southern Utah	Warm to cool wet	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>E. arvense</i> <i>G. richardsonii</i> <i>Thalictrum fendleri</i> <i>O. chilensis</i>	Youngblood 1984
<i>Picea pungens</i> / <i>Erigeron eximius</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> / <i>E. superbus</i> H.T.]	Mountains of Arizona, northern New Mexico, and southern Colo- rado	Cool dry	Co-climax with <i>P. pungens</i> <i>P. engelmannii</i> <i>A. concolor</i>	<i>P. pungens</i> <i>P. engelmannii</i> <i>A. concolor</i> <i>A. lasiocarpa</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>E. superbus</i> (<i>E. eximius</i>) <i>F. arizonica</i> <i>C. foenea</i> <i>F. virginiana</i> <i>G. richardsonii</i> <i>T. fendleri</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Fragaria ovalis</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>Valeriana acutiloba</i> H.T.]	Mountains of New Mexico and eastern Arizona	Cool moist	Co-climax with <i>P. pungens</i>	<i>P. pungens</i> <i>P. ponderosa</i> <i>A. concolor</i> <i>P. strobiformis</i> <i>P. tremuloides</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>F. ovalis</i> <i>V. acutiloba</i> <i>C. foenea</i> <i>F. arizonica</i> <i>E. superbus</i> (<i>E. eximius</i>)	Alexander et al. 1984a Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Senecio cardamine</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> / <i>S. cardamine</i> H.T.]	White Mountains, Arizona	Cool moist	Seral to <i>P. pungens</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>P. pungens</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>A. concolor</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>S. cardamine</i> <i>P. aquilinum</i> <i>Helenium hoopesii</i> <i>Viola canadensis</i>	Moir and Ludwig 1979

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Populus tremuloides</i> series and other <i>P. tremuloides</i> dominated vegetation						
<i>Populus tremuloides</i> - <i>Pseudotsuga menziesii</i> / <i>Amelanchier alnifolia</i> C.T., <i>P. tremuloides</i> / <i>A. alnifolia</i> C.T.	Mountains of southeastern Idaho	Warm dry	Climax or ultimate climax unknown	<i>P. tremuloides</i>	<i>A. alnifolia</i> <i>P. virginiana</i> <i>P. myrsinites</i> <i>S. oreophilus</i> <i>S. betulifolia</i> <i>C. rubescens</i>	Mueggler and Campbell 1982
<i>Populus tremuloides</i> / <i>Pachistima myrsinites</i> C.T.	Mountains of southeastern Idaho	Warm dry	Ultimate climax unknown. Probably <i>P. menziesii</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>P. tremuloides</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>P. myrsinites</i> <i>C. rubescens</i> <i>S. oreophilus</i> <i>Lupinus argenteus</i>	Mueggler and Campbell 1982
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Prunus virginiana</i> C.T., <i>P. tremuloides</i> / <i>P. virginiana</i> C.T.	Mountains of western Wyoming	Warm dry	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>P. virginiana</i> <i>B. repens</i> <i>S. oreophilus</i> <i>R. woodsii</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Pseudotsuga menziesii</i> / <i>Spiraea betulifolia</i> C.T., <i>P. tremuloides</i> / <i>S. betulifolia</i> C.T.	Mountains of southeastern Idaho and western Wyoming	Warm dry	Climax	<i>P. tremuloides</i>	<i>S. betulifolia</i> <i>A. alnifolia</i> <i>B. repens</i> <i>C. rubescens</i>	Mueggler and Campbell 1982 Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Symphoricarpos</i> <i>oreophilus</i> C.T., <i>P. tremuloides</i> / <i>S. oreophilus</i> H.T. (CO); C.T.(WY,ID,UT)	Mountains of southeastern Idaho, northern Utah, western Wyoming, north- ern and central Colorado	Warm well- drained	Seral to <i>A. lasiocarpa</i> or ultimate climax unknown	<i>A. lasiocarpa</i> <i>A. concolor</i> <i>P. tremuloides</i>	<i>S. oreophilus</i> <i>P. virginiana</i> <i>B. repens</i> <i>Elymus glaucus</i> <i>Geranium</i> <i>viscosissimum</i> <i>L. argenteus</i>	Hess and Wasser 1982 Mauk and Hender- son 1984 Mueggler and Campbell 1982 Steele et al. 1983 Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Pseudotsuga menziesii</i> / <i>Symphoricarpos</i> <i>oreophilus</i> C.T., <i>P. tremuloides</i> / <i>S. oreophilus</i> C.T.	Mountains of southeastern Idaho	Warm dry	Climax	<i>P. tremuloides</i> <i>A. lasiocarpa</i> <i>P. contorta</i>	<i>S. oreophilus</i> <i>C. rubescens</i> <i>P. pratensis</i> <i>Rudbeckia</i> <i>occidentalis</i> <i>C. geyeri</i>	Mueggler and Campbell 1982
<i>Populus tremuloides</i> - <i>Pseudotsuga menziesii</i> / <i>Calamagrostis rubescens</i> C.T., <i>P. tremuloides</i> / <i>C. rubescens</i> C.T.	Mountains of southeastern Idaho and western Wyoming	Warm dry	Climax	<i>P. tremuloides</i> <i>P. contorta</i>	<i>C. rubescens</i> <i>S. oreophilus</i> <i>T. fendleri</i> <i>A. cordifolia</i>	Mueggler and Campbell 1982 Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Pinus contorta</i> / <i>Calamagrostis rubescens</i> C.T., <i>P. tremuloides</i> / <i>C. rubescens</i> C.T.	Mountains of southeastern Idaho	Warm dry	Ultimate climax unknown. Probably <i>A. lasiocarpa</i> or <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>C. rubescens</i> <i>S. oreophilus</i> <i>P. myrsinites</i> <i>L. argenteus</i> <i>T. fendleri</i>	Mueggler and Campbell 1982
<i>Populus tremuloides</i> / <i>Festuca thurberi</i> H.T.	Mountains of northern and central Colorado	Warm dry	Ultimate climax unknown	<i>P. tremuloides</i> <i>P. contorta</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>F. thurberi</i> <i>B. repens</i> <i>S. oreophilus</i> <i>F. ovalis</i>	Hess 1981 Hess and Wasser 1982

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Populus tremuloides</i> / <i>Poa pratensis</i> C.T.	Mountains of southeastern Idaho	Warm dry	Ultimate climax unknown. Probably <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>P. pratensis</i> <i>G. viscosissimum</i> <i>C. rubescens</i> <i>T. fendleri</i> <i>L. argenteus</i>	Mueggler and Campbell 1982
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Pedicularis racemosa</i> C.T.	Mountains of western Wyoming	Cool moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>P. racemosa</i> <i>A. cordifolia</i> <i>S. oreophilus</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Thalictrum fendleri</i> H.T. (CO)	Mountains of northern and central Colorado	Warm moist	Ultimate climax unknown	<i>P. tremuloides</i> <i>P. flexilis</i> <i>P. contorta</i>	<i>T. fendleri</i> <i>C. geyeri</i> <i>E. glaucus</i>	Hess 1981 Hess and Wasser 1982
<i>Pinus contorta</i> series and other <i>P. contorta</i> dominated vegetation						
<i>Pinus contorta</i> / <i>Juniperus communis</i> H.T.(CO); C.T.(ID,UT,WY)	Mountains of eastern Idaho, northern Utah, northwestern Wyoming, and central Colorado	Warm dry	Seral to <i>P. contorta</i> (CO). Ultimate climax unknown (ID,UT,WY)	<i>P. contorta</i> <i>P. tremuloides</i> <i>Pinus albicaulis</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>S. canadensis</i> <i>A. cordifolia</i>	Hess 1981 Mauk and Henderson 1984 Steele et al. 1983
<i>Pinus contorta</i> / <i>Linnaea borealis</i> C.T.	Mountains of Montana east of Continental Divide, and northwestern Wyoming	Cool moist to well-drained	Ultimate climax unknown	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i>	<i>L. borealis</i> <i>V. scoparium</i> <i>V. globulare</i> <i>A. cordifolia</i> <i>C. rubescens</i>	Pfister et al. 1977 Steele et al. 1983
<i>Pinus contorta</i> / <i>Purshia tridentata</i> H.T.	Mountains of western Montana	Cool-warm dry to well-drained	Ultimate climax unknown. May be <i>P. contorta</i>	<i>P. contorta</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>P. tridentata</i> <i>A. uva-ursi</i> <i>C. rossii</i> <i>A. spicatum</i> <i>Lupinus</i> spp.	Pfister et al. 1977
<i>Pinus contorta</i> / <i>Shepherdia canadensis</i> C.T.	Mountains of southeastern Idaho and northwestern Wyoming	Cool-warm dry to well-drained	Ultimate climax unknown	<i>P. contorta</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>A. lasiocarpa</i> <i>P. albicaulis</i>	<i>S. canadensis</i> <i>A. cordifolia</i> <i>J. communis</i> <i>A. uva-ursi</i>	Steele et al. 1983
<i>Pinus contorta</i> / <i>Spiraea betulifolia</i> C.T.	Mountains of eastern Idaho to northwestern Wyoming	Warm dry	Ultimate climax unknown	<i>P. contorta</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>S. betulifolia</i> <i>C. rubescens</i> <i>C. geyeri</i>	Steele et al. 1983
<i>Pinus contorta</i> / <i>Vaccinium caespitosum</i> C.T.	Mountains of south-central Montana, Idaho, and northern Utah	Cool well-drained	Ultimate climax unknown	<i>P. contorta</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>V. caespitosum</i> <i>V. scoparium</i> <i>Festuca ovina</i> <i>L. borealis</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Pinus contorta</i> / <i>Vaccinium globulare</i> C.T.	Mountains of southern Idaho, northwestern Wyoming, and northern Utah	Cool well-drained	Ultimate climax unknown	<i>P. contorta</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>V. globulare</i> <i>L. utahensis</i> <i>V. scoparium</i> <i>C. rubescens</i>	Steele et al. 1983
<i>Pinus contorta</i> / <i>Vaccinium scoparium</i> H.T. (CO,WY); C.T.(ID,UT,MT)	Bighorn Mountains, Wyoming; mountains of central Colorado, Montana, Idaho, and northern Utah	Cool to cold dry	Seral to <i>P. contorta</i> (CO,WY) or ultimate climax unknown (ID, UT, MT)	<i>P. contorta</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>A. grandis</i> <i>L. occidentalis</i>	<i>V. scoparium</i> <i>A. cordifolia</i> <i>J. communis</i> <i>L. borealis</i> <i>C. rubescens</i> <i>B. repens</i> <i>C. geyeri</i>	Cooper et al. 1983 Hess 1981 Hoffman and Alexander 1976 Pfister et al. 1977 Steele et al. 1981

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus contorta</i> / <i>Xerophyllum tenax</i> C.T.	Mountains of northern Idaho	Warm dry	Ultimate climax unknown. Probably seral or minor climax to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. engelmannii</i>	<i>X. tenax</i> <i>Vaccinium</i> spp.	Cooper et al. 1983
<i>Pinus contorta</i> / <i>Calamagrostis rubescens</i> C.T.	Mountains of Montana, Idaho, northeastern Utah, and north- western Wyoming	Warm dry	Ultimate climax unknown	<i>P. contorta</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>L. occidentalis</i>	<i>C. rubescens</i> <i>V. scoparium</i> <i>C. geyseri</i> <i>A. cordifolia</i> <i>A. uva-ursi</i>	Pfister 1977 Steele et al. 1981, 1983
<i>Pinus contorta</i> / <i>Festuca idahoensis</i> H.T.	Mountains of central Idaho	Warm dry to well- drained	Seral to <i>P. contorta</i>	<i>P. contorta</i> <i>P. albicaulis</i>	<i>F. idahoensis</i> <i>C. rossii</i>	Steele et al. 1981
<i>Pinus contorta</i> / <i>Carex geyseri</i> C.T.	Mountains of central Idaho	Cool dry	Ultimate climax unknown	<i>P. contorta</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>C. geyseri</i> <i>S. oreophilus</i> <i>A. cordifolia</i> <i>J. communis</i>	Steele et al. 1981
<i>Pinus contorta</i> / <i>Geranium fremontii</i> H.T.	Front Range, Colorado	Warm dry	Seral to <i>P. contorta</i>	<i>P. contorta</i>	<i>G. fremontii</i> <i>A. uva-ursi</i> <i>J. communis</i>	Moir 1969
<i>Tsuga heterophylla</i> series						
<i>Tsuga heterophylla</i> / <i>Pachistima myrsinites</i> H.T.	Mountains of northern Idaho and eastern Washington	Warm moist	Seral to <i>T. heterophylla</i>	<i>T. heterophylla</i> <i>T. plicata</i> <i>L. occidentalis</i> <i>A. grandis</i> <i>P. monticola</i>	<i>P. myrsinites</i> <i>C. uniflora</i> <i>L. borealis</i> <i>Vaccinium mem- branaceum</i>	Daubenmire and Daubenmire 1968
<i>Tsuga heterophylla</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northern Idaho and northwestern Montana	Warm moist	Seral to <i>T. heterophylla</i> <i>T. plicata</i>	<i>T. heterophylla</i> <i>T. plicata</i> <i>P. monticola</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>L. occidentalis</i> <i>P. contorta</i> <i>A. grandis</i>	<i>C. uniflora</i> <i>A. nudicaulis</i> <i>M. ferruginea</i> <i>X. tenax</i> <i>A. caudatum</i>	Cooper et al. 1983 Pfister et al. 1977
<i>Picea engelmannii</i> series						
<i>Picea engelmannii</i> / <i>Acer glabrum</i> H.T.	Chiricahua and Sacramento Mountains, Arizona and New Mexico	Warm moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>A. glabrum</i> <i>B. ciliatus</i> <i>V. canadensis</i> <i>S. stellata</i>	Alexander et al. 1984a Moir and Ludwig 1979
<i>Picea engelmannii</i> / <i>Juniperus communis</i> H.T.	Wind River and Absaroka Moun- tains, north- western Wyoming	Warm dry	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. flexilis</i> <i>P. albicaulis</i> <i>P. contorta</i>	<i>J. communis</i> <i>A. cordifolia</i> <i>Frasera speciosa</i>	Steele et al. 1983
<i>Picea engelmannii</i> / <i>Linnaea borealis</i> H.T.	Mountains of Montana east of Continental Divide and Wind River Mountains, Wyoming	Cool well- drained	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i>	<i>L. borealis</i> <i>V. globulare</i> <i>S. albus</i> <i>J. communis</i>	Pfister et al. 1977 Steele et al. 1983

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Picea engelmannii</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of south-central Montana, eastern Idaho, and northwestern Wyoming	Warm moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> (minor climax) <i>P. contorta</i>	<i>P. malvaceus</i> <i>G. triflorum</i> <i>S. albus</i> <i>S. betulifolia</i>	Pfister et al. 1977 Steele et al. 1983
<i>Picea engelmannii</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of northwest Mon- tana	Cool well- drained	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>L. occidentalis</i> <i>P. ponderosa</i> <i>P. contorta</i>	<i>V. caespitosum</i> <i>L. borealis</i> <i>V. scoparium</i> <i>C. rubescens</i> <i>R. montigenum</i>	Pfister et al. 1977
<i>Picea engelmannii</i> / <i>Vaccinium scoparium</i> H.T.	Bighorn Moun- tains, north- central Wyoming	Cool dry	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i>	<i>V. scoparium</i> <i>A. cordifolia</i> <i>C. rossii</i> <i>Antennaria</i> spp. <i>F. virginiana</i>	Hoffman and Alex- ander 1976
<i>Picea engelmannii</i> / <i>Bromus ciliatus</i> H.T.	Mogollon and Black Mountains, New Mexico	Cool dry	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i>	<i>B. ciliatus</i> <i>G. richardsonii</i> <i>L. arizonicus</i> <i>S. stellata</i> <i>V. canadensis</i>	Fitzhugh et al. 1984
<i>Picea engelmannii</i> / <i>Elymus triticoides</i> H.T.	Capitan Moun- tains, New Mex- ico	Cool dry to well- drained	Seral to <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>E. triticoides</i> <i>A. glabrum</i> <i>J. americana</i>	Alexander 1984a Moir and Ludwig 1979
<i>Picea engelmannii</i> / <i>Arnica cordifolia</i> H.T.	Mountains of northwestern Wyoming	Cool well- drained	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. flexilis</i> <i>P. albicaulis</i> <i>P. tremuloides</i> <i>P. contorta</i>	<i>A. cordifolia</i> <i>C. rossii</i> <i>A. miser</i> <i>F. speciosa</i>	Steele et al. 1983
<i>Picea engelmannii</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northwestern Montana	Warm moist to dry	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>L. occidentalis</i>	<i>C. uniflora</i> <i>V. caespitosum</i> <i>A. nudicaulis</i> <i>Calamagrostis</i> <i>canadensis</i>	Pfister et al. 1977
<i>Picea engelmannii</i> / <i>Galium triflorum</i> H.T.	Mountains of south-central Montana, and western Wyoming	Warm moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. pungens</i> <i>P. ponderosa</i>	<i>G. triflorum</i> <i>Actaea rubra</i> <i>S. stellata</i> <i>S. amplexifolius</i>	Pfister et al. 1977 Steele et al. 1983
<i>Picea engelmannii</i> / <i>Hypnum revolutum</i> H.T.	Mountains of southeastern Idaho and north- western Wyoming	Cool dry	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. flexilis</i> <i>P. albicaulis</i>	<i>H. revolutum</i> <i>Dicranowiesia</i> <i>crispula</i>	Steele et al. 1981, 1983
<i>Picea engelmannii</i> / <i>Senecio cardamine</i> H.T.	Blue Mountains, Arizona	Cool moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. pungens</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>A. lasiocarpa</i> <i>A. concolor</i> <i>P. tremuloides</i>	<i>S. cardamine</i> <i>F. ovalis</i> <i>G. richardsonii</i> <i>V. canadensis</i>	Fitzhugh et al. 1984
<i>Picea engelmannii</i> / <i>Senecio streptanthifolius</i> H.T.	Mountains of central and southwestern Montana	Cool dry to well- drained	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. flexilis</i> <i>P. albicaulis</i>	<i>S. streptanthifolius</i> <i>P. secunda</i> <i>A. cordifolia</i>	Pfister et al. 1977

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Picea engelmannii</i> / <i>Smilacina stellata</i> H.T.	Mountains of Montana east of Continental Divide	Warm moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. ponderosa</i>	<i>S. stellata</i> <i>S. racemosa</i> <i>T. occidentale</i>	Pfister et al. 1977
<i>Picea engelmannii</i> / Moss spp. H.T.	Mountains of north-central and northwestern New Mexico	Cool moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. tremuloides</i> <i>P. aristata</i>	Moss spp. <i>A. glabrum</i> <i>J. americana</i> <i>E. superbus</i> (<i>E. eximius</i>)	Alexander et al. 1984c Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> series						
<i>Abies lasiocarpa</i> / <i>Acer glabrum</i> H.T.	Mountains of central and southern Idaho, northern and central Utah, and western Wyo- ming; mountains of north-central and northwestern New Mexico	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>A. concolor</i> <i>P. pungens</i> (UT)	<i>A. glabrum</i> <i>T. occidentale</i> <i>T. fendleri</i> <i>O. chilensis</i> <i>A. alnifolia</i> <i>B. repens</i> <i>B. ciliatus</i>	Alexander et al. 1984c Mauk and Hender- son 1984 Steele et al. 1981, 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Alnus sinuata</i> H.T.	Mountains of northern Montana and central Idaho	Cool moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>A. sinuata</i> <i>X. tenax</i> <i>V. scoparium</i> <i>V. globulare</i>	Pfister et al. 1977 Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Berberis repens</i> H.T.	Mountains of Utah, north- western Wyo- ming, and south- eastern Idaho	Warm-cool well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. pungens</i> <i>P. flexilis</i> <i>A. concolor</i> <i>P. tremuloides</i>	<i>B. repens</i> <i>R. montigenum</i> <i>C. geyseri</i> <i>P. myrsinites</i> <i>S. oreophilus</i>	Mauk and Hender- son 1984 Pfister 1972 Steele et al. 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Clematis pseudoalpina</i> H.T.	Mountains of Montana east of Continental Divide	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. flexilis</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. albicaulis</i>	<i>C. pseudoalpina</i> <i>Clematis tenuiloba</i>	Pfister et al. 1977
<i>Abies lasiocarpa</i> / <i>Juniperus communis</i> H.T.	Mountains of central Idaho, northwestern Wyoming, and northern Utah; mountains of northern Arizona and New Mexico	Warm to cold dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>A. concolor</i> (NM,AZ) <i>P. longaeva</i> (UT) <i>P. pungens</i> (UT)	<i>J. communis</i> <i>P. secunda</i> <i>S. canadensis</i> <i>A. cordifolia</i> <i>S. oreophilus</i> <i>R. woodsii</i>	Mauk and Hender- son 1984 Moir and Ludwig 1979 Steele et al. 1981, 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Linnaea borealis</i> H.T.	Mountains of Montana, central and southern Idaho, and western Wyoming	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>P. ponderosa</i> <i>L. occidentalis</i>	<i>L. borealis</i> <i>V. scoparium</i> <i>C. rubescens</i> <i>A. cordifolia</i> <i>R. parviflorus</i>	Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> H.T.	Mountains of Montana and Idaho	Cool moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>P. monticola</i> <i>P. albicaulis</i>	<i>M. ferruginea</i> <i>V. globulare</i> <i>A. latifolia</i>	Pfister et al. 1977 Steele et al. 1981

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Oplopanax horridum</i> H.T.	Mountains of northern Montana	Cool moist to wet	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. monticola</i> <i>L. occidentalis</i>	<i>O. horridum</i> <i>Taxus brevifolia</i>	Pfister et al. 1977
<i>Abies lasiocarpa</i> / <i>Pachistima myrsinites</i> H.T., <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>P. myrsinites</i> H.T.	Mountains of northern Idaho and eastern Washington; mountains of central Colorado	Warm dry to well- drained	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. monticola</i> <i>L. occidentalis</i> <i>P. tremuloides</i>	<i>P. myrsinites</i> <i>C. uniflora</i> <i>G. triflorum</i> <i>C. geyeri</i> <i>Erigeron</i> spp.	Daubenmire and Daubenmire 1968 Hess and Wasser 1982
<i>Abies lasiocarpa</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of eastern Idaho, northwestern Wyoming, and northern and central Utah	Warm moist	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>A. concolor</i>	<i>P. malvaceus</i> <i>S. albus</i> <i>S. betulifolia</i> <i>A. alnifolia</i> <i>Sorbus scopulina</i>	Mauk and Hender- son 1984 Steele et al. 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Ribes montigenum</i> H.T.	Mountains of Utah	Cool dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>R. montigenum</i> <i>A. latifolia</i> <i>T. fendleri</i> <i>Mertensia arizonica</i>	Mauk and Hender- son 1984 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Rubus parviflorus</i> H.T.	Mimbres and Mogollon Moun- tains, New Mex- ico; San Juan Mountains, Colo- rado	Warm moist	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>A. concolor</i> <i>P. tremuloides</i>	<i>R. parviflorus</i> <i>V. myrtillus</i> <i>A. glabrum</i>	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Shepherdia canadensis</i> H.T.	Bighorn Mountains, north-central Wyoming	Cool to warm dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>S. canadensis</i> <i>V. scoparium</i>	Hoffman and Alex- ander 1976
<i>Abies lasiocarpa</i> / <i>Spiraea betulifolia</i> H.T.	Mountains of central and southern Idaho and western Wyo- ming	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. albicaulis</i>	<i>S. betulifolia</i> <i>P. myrsinites</i> <i>C. rubescens</i>	Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Symphoricarpos albus</i> H.T.	Mountains of southeastern Idaho and western Wyoming	Warm well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>S. albus</i> <i>A. alnifolia</i> <i>C. rubescens</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of central Idaho, northern and central Utah	Cool well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>V. caespitosum</i> <i>L. borealis</i> <i>C. rubescens</i> <i>V. scoparium</i> <i>A. cordifolia</i>	Mauk and Hender- son 1984 Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Vaccinium globulare</i> H.T.	Mountains of south-central Montana, central Idaho, northern Utah, and north- western Wyoming	Moist to cool well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>V. globulare</i> <i>V. scoparium</i> <i>L. utahensis</i> <i>P. myrsinites</i> <i>A. cordifolia</i>	Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981, 1983

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Vaccinium myrtillus</i> H.T. [<i>A. lasiocarpa</i> / <i>V. myrtillus</i> - <i>Linnaea borealis</i> H.T.] [<i>A. lasiocarpa</i> / <i>V. myrtillus</i> - <i>Rubus parviflorus</i> H.T.] [<i>A. lasiocarpa</i> / <i>Vaccinium scoparium</i> - <i>L. borealis</i> H.T.]	Mogollon Plateau, Arizona; moun- tains of northern New Mexico and southern Colo- rado	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i> (AZ) <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>A. concolor</i> <i>P. pungens</i> <i>P. flexilis</i> <i>P. aristata</i>	<i>V. myrtillus</i> <i>Disporum</i> <i>trachycarpum</i> <i>C. canadensis</i> <i>Polemonium flavum</i> <i>V. scoparium</i>	Alexander et al. 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Vaccinium scoparium</i> H.T.	Mountains of Montana and Idaho, south to Arizona, and New Mexico	Cool dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>P. tremuloides</i> <i>P. albicaulis</i>	<i>V. scoparium</i> <i>C. rubescens</i> <i>V. myrtillus</i> <i>A. cordifolia</i> <i>C. geyeri</i> <i>E. superbus</i> (<i>E. eximius</i>) <i>Polemonium</i> <i>delicatum</i> <i>L. borealis</i> <i>P. myrsinites</i>	Hoffman and Alex- ander 1976 Mauk and Hender- son 1984 Moir and Ludwig 1979 Pfister 1972 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Xerophyllum tenax</i> H.T.	Mountains of northern Idaho and eastern Washington and Oregon, south to southern Idaho, Montana and western Wyoming	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. albicaulis</i> <i>P. contorta</i> <i>P. ponderosa</i>	<i>X. tenax</i> <i>V. membranaceum</i> <i>V. scoparium</i> <i>V. globulare</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Calamagrostis canadensis</i> H.T.	Mountains of central and southern Idaho	Cool wet	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>C. canadensis</i> <i>G. triflorum</i> <i>V. caespitosum</i> <i>Ledum glandulosum</i> <i>S. triangularis</i>	Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Calamagrostis rubescens</i> H.T.	Mountains of Montana east of Continental Divide, central and southern Idaho, northern Utah, and north- western Wyoming	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>C. rubescens</i> <i>O. chilensis</i> <i>T. occidentale</i> <i>C. geyeri</i> <i>A. cordifolia</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Carex geyeri</i> H.T.	Mountains of central Montana and central Idaho	Warm to cool dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. albicaulis</i>	<i>C. geyeri</i> <i>S. oreophilus</i> <i>A. cordifolia</i> <i>L. argenteus</i>	Pfister et al. 1977 Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Carex rossii</i> H.T.	Mountains of central and southern Utah	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>C. rossii</i> <i>A. cordifolia</i> <i>A. miser</i> <i>R. woodsii</i>	Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Aconitum columbianum</i> H.T.	Mountains of central and southern Utah	Cool moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>A. concolor</i>	<i>A. columbianum</i> <i>Actaea rubra</i> <i>A. cordifolia</i> <i>B. ciliatus</i>	Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Actaea rubra</i> H.T.	Mountains of central Idaho, northern Utah, and western Wyo- ming	Warm moist	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. pungens</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>A. rubra</i> <i>O. chilensis</i> <i>L. utahensis</i> <i>V. globulare</i>	Mauk and Hender- son 1984 Steele et al. 1983

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Arnica cordifolia</i> H.T.	Mountains of Montana, east of Continental Divide, central Idaho, western and north-central Wyoming	Cool well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>A. cordifolia</i> <i>P. secunda</i> <i>A. miser</i> <i>F. virginiana</i>	Hoffman and Alex- ander 1976 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Arnica latifolia</i> H.T.	Mountains of southern Idaho, northern Utah, and northwestern Wyoming	Cool dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>P. albicaulis</i>	<i>A. latifolia</i> <i>Aster engelmannii</i> <i>Pedicularis</i> <i>racemosa</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northwestern Montana, north- ern and central Idaho	Warm moist to dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>L. occidentalis</i> <i>P. contorta</i> <i>A. grandis</i> <i>P. ponderosa</i>	<i>C. uniflora</i> <i>X. tenax</i> <i>M. ferruginea</i> <i>V. caespitosum</i> <i>A. nudicaulis</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Coptis occidentalis</i> H.T.	Mountains of central and north- ern Idaho	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>A. grandis</i> <i>L. occidentalis</i>	<i>C. occidentalis</i> <i>X. tenax</i> <i>V. globulare</i> <i>M. ferruginea</i>	Cooper et al. 1983 Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Erigeron superbus</i> (<i>E. eximius</i>) H.T.	Mountains south- west Colorado, New Mexico, and Arizona	Cool dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>A. concolor</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>P. tremuloides</i>	<i>E. superbus</i> (<i>E. eximius</i>) <i>G. richardsonii</i> <i>L. arizonicus</i> <i>Lonicera involucrata</i> <i>A. cordifolia</i>	Alexander et al. 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Galium triflorum</i> H.T.	Mountains of Montana	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>G. triflorum</i> <i>A. rubra</i> <i>S. amplexifolius</i>	Pfister et al. 1977
<i>Abies lasiocarpa</i> / <i>Lathyrus arizonicus</i> H.T. [<i>A. lasiocarpa</i> - <i>Pinus strobiformis</i> / <i>L. arizonicus</i> H.T.]	Mogollon Moun- tains, New Mex- ico	Cool dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. strobiformis</i>	<i>L. arizonicus</i> <i>A. glabrum</i> <i>S. oreophilus</i> <i>V. americana</i>	Fitzhugh et al. 1984
<i>Abies lasiocarpa</i> / <i>Osmorhiza chilensis</i> H.T.	Mountains of southern Idaho	Warm moist to well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>O. chilensis</i> <i>C. rossii</i> <i>B. repens</i> <i>P. myrsinites</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Pedicularis racemosa</i> H.T.	Mountains of southeastern Idaho, north- western Wyo- ming, and north- ern Utah	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>P. racemosa</i> <i>A. cordifolia</i> <i>S. oreophilus</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Saxifraga bronchialis</i> H.T. (Scree Forest)	Mogollon Moun- tains, New Mex- ico	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. strobiformis</i>	<i>S. bronchialis</i> <i>S. oreophilus</i> <i>J. communis</i> <i>H. dumosus</i>	Fitzhugh et al. 1984

Table A2.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. menziesii</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Senecio sanguisorboides</i> H.T.	Sacramento Mountains, New Mexico	Cool dry to well- drained	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>S. sanguisorboides</i> <i>R. montigenum</i> <i>Ribes wolfii</i>	Alexander et al. 1984a Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Thalictrum occidentale</i> H.T.	Mountains of southeastern Idaho and north- western Wyoming	Warm well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>T. occidentale</i> <i>O. chilensis</i> <i>A. cordifolia</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / Moss spp. H.T.	Mountains of northern New Mexico and southern Colo- rado	Cool dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. aristata</i>	Moss spp. <i>Vaccinium</i> spp. <i>J. communis</i> <i>A. glabrum</i>	DeVelice et al. 1984
<i>Tsuga mertensiana</i> series						
<i>Tsuga mertensiana</i> / <i>Menziesia ferruginea</i> H.T.	Mountains of western Montana	Cool moist	Seral to <i>T. mertensiana</i>	<i>T. mertensiana</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>M. ferruginea</i> <i>Rhododendron albi- florum</i> <i>X. tenax</i>	Pfister et al. 1977
<i>Tsuga mertensiana</i> / <i>Xerophyllum tenax</i> H.T.	Mountains of northern Idaho, northwestern Montana, moun- tains of British Columbia south to central Oregon	Cool dry	Seral to <i>T. mertensiana</i>	<i>T. mertensiana</i> <i>P. contorta</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. albicaulis</i> <i>P. monticola</i> <i>L. occidentalis</i>	<i>X. tenax</i> <i>V. membranaceum</i> <i>V. globulare</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977
<i>Tsuga mertensiana</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northern Idaho	Cool moist	Seral to <i>T. mertensiana</i>	<i>T. mertensiana</i> <i>P. contorta</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>A. grandis</i>	<i>C. uniflora</i> <i>M. ferruginea</i> <i>X. tenax</i>	Cooper et al. 1983
<i>Tsuga mertensiana</i> / <i>Streptopus amplexifolius</i> H.T.	Mountains of northern Idaho	Cool moist	Seral to <i>T. mertensiana</i>	<i>T. mertensiana</i> <i>L. occidentalis</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>S. amplexifolius</i> <i>S. triangularis</i> <i>T. carolinensis</i> <i>Veratrum viride</i>	Cooper et al. 1983

Table A3.—Habitat types, community types, and plant communities in which interior *Abies concolor* is climax, co-climax, minor climax, or seral.

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. concolor</i>	Principal tree associates	Principal understory species	Authority
<i>Abies concolor</i> series						
<i>Abies concolor</i> / <i>Acer glabrum</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>A. glabrum</i> H.T.]	Mountains of southern Utah, New Mexico, Arizona, and southern Colorado	Warm moist to well-drained	Climax or co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>Populus tremuloides</i> <i>Pinus strobiformis</i> <i>Picea pungens</i> <i>Picea engelmannii</i> <i>Pinus ponderosa</i> (NM) <i>Abies lasiocarpa</i>	<i>A. glabrum</i> <i>Berberis repens</i> <i>Quercus gambelii</i> <i>Holodiscus dumosus</i> <i>Pachistima myrsinites</i> <i>Prunus virginiana</i> <i>Amelanchier alnifolia</i>	Alexander et al. 1984a, 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979 Youngblood 1984
<i>Abies concolor</i> / <i>Acer grandidentatum</i> H.T.	Mountains of northern Arizona and New Mexico	Cool moist to warm well-drained	Climax	<i>P. menziesii</i> <i>P. ponderosa</i> (AZ) <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>A. grandidentatum</i> <i>Q. gambelii</i> <i>Carex foenea</i> <i>H. dumosus</i>	Alexander et al. 1984a Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Arctostaphylos patula</i> H.T.	Mountains of southern Utah	Warm dry	Climax	<i>P. menziesii</i> <i>P. pungens</i> <i>P. ponderosa</i> <i>Pinus flexilis</i> <i>Juniperus scopulorum</i>	<i>A. patula</i> <i>Juniperus communis</i> <i>Symphoricarpos oreophilus</i> <i>Rosa woodsii</i>	Youngblood 1984
<i>Abies concolor</i> / <i>Arctostaphylos uva-ursi</i> H.T.	Mountains of northern New Mexico and southern Colorado	Warm dry	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>A. uva-ursi</i> <i>P. myrsinites</i>	DeVelice et al. 1984
<i>Abies concolor</i> / <i>Berberis repens</i> H.T.	Mountains of Utah	Warm dry	Climax	<i>P. menziesii</i> <i>Pinus contorta</i> <i>P. flexilis</i> <i>Abies grandis</i> <i>P. tremuloides</i> <i>P. ponderosa</i> <i>P. pungens</i>	<i>B. repens</i> <i>S. oreophilus</i> <i>Osmorhiza</i> spp. <i>Lathyrus leucanthus</i> <i>J. communis</i> <i>R. woodsii</i> <i>P. myrsinites</i>	Mauk and Henderson 1984 Youngblood 1984
<i>Abies concolor</i> / <i>Cercocarpus ledifolius</i> H.T.	Mountains of central and southern Utah	Warm dry	Climax	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>C. ledifolius</i> <i>Q. gambelii</i> <i>A. alnifolia</i> <i>B. repens</i> <i>S. oreophilus</i>	Youngblood 1984
<i>Abies concolor</i> / <i>Juglans major</i> H.T.	Mountains of southern New Mexico	Warm moist	Climax	<i>P. menziesii</i> <i>P. tremuloides</i> <i>Populus angustifolia</i> <i>Fraxinus pennsylvanica</i>	<i>J. major</i> <i>Q. gambelii</i> <i>Poa pratensis</i> <i>Vitis arizonica</i>	Alexander et al. 1984a Fitzhugh et al. 1984
<i>Abies concolor</i> / <i>Juniperus communis</i> H.T.	Mountains of southern Utah	Warm dry	Climax	<i>P. menziesii</i> <i>P. pungens</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>J. communis</i> <i>S. oreophilus</i> <i>R. woodsii</i> <i>B. repens</i> <i>Carex rossii</i>	Youngblood 1984
<i>Abies concolor</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of Utah	Warm moist	Climax	<i>P. menziesii</i> <i>P. tremuloides</i> <i>A. grandis</i> <i>J. scopulorum</i>	<i>P. malvaceus</i> <i>Mitella stauropetala</i> <i>Smilacina racemosa</i> <i>A. alnifolia</i> <i>S. oreophilus</i>	Mauk and Henderson 1984 Youngblood 1984

Table A3.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. concolor</i>	Principal tree associates	Principal understory species	Authority
<i>Abies concolor</i> / <i>Quercus gambelii</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Q. gambelii</i> H.T.]	Mountains of Utah, New Mex- ico, Arizona, and southern Colo- rado	Warm dry	Climax or co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. tremuloides</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>J. scopulorum</i>	<i>Q. gambelii</i> <i>Muhlenbergia</i> <i>virescens</i> <i>Festuca arizonica</i> <i>S. oreophilus</i> <i>A. alnifolia</i> <i>B. repens</i> <i>C. rossii</i>	Alexander et al. 1984a, 1984c Fitzhugh et al. 1984 DeVelice et al. 1984 Moir and Ludwig 1979 Youngblood 1984
<i>Abies concolor</i> / <i>Robinia neomexicana</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>R. neomexicana</i> H.T.]	Mountains of Arizona and New Mexico	Warm dry	Climax or co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. tremuloides</i> <i>P. strobiformis</i> <i>P. ponderosa</i> <i>P. engelmannii</i>	<i>R. neomexicana</i> <i>S. oreophilus</i> <i>Q. gambelii</i>	Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Symphoricarpos</i> <i>oreophilus</i> H.T.	Mountains of central and southern Utah	Warm dry	Climax	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>J. scopulorum</i>	<i>S. oreophilus</i> <i>R. woodsii</i> <i>A. alnifolia</i> <i>C. rossii</i> <i>Poa fendleriana</i>	Youngblood 1984
<i>Abies concolor</i> / <i>Vaccinium myrtillus</i> H.T.	Mountains of northern New Mexico and southern Colo- rado	Cool dry	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. pungens</i> <i>P. tremuloides</i>	<i>V. myrtillus</i> <i>A. uva-ursi</i> <i>P. myrsinites</i> <i>A. glabrum</i> <i>Rubus parviflorus</i>	DeVelice et al. 1984
<i>Abies concolor</i> / <i>Elymus triticoides</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>E. triticoides</i> H.T.]	Capitan Moun- tains, New Mex- ico	Warm dry	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>E. triticoides</i> <i>Bromus richardsonii</i>	Alexander et al. 1984a Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Festuca arizonica</i> H.T.	Mountains of northern New Mexico	Warm dry	Climax to co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>F. arizonica</i> <i>Q. gambelii</i> <i>Muhlenbergia</i> spp. <i>Poa</i> spp.	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Muhlenbergia virescens</i> H.T.	Mountains of eastern Arizona and southwestern New Mexico	Warm dry	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. strobiformis</i> <i>P. ponderosa</i>	<i>M. virescens</i> <i>Lupinus</i> spp. <i>P. fendleriana</i> <i>Senecio</i> spp.	Fitzhugh et al. 1984
<i>Abies concolor</i> / <i>Poa fendleriana</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>P. fendleriana</i> H.T.]	White Mountains, Arizona	Warm dry	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>P. tremuloides</i>	<i>P. fendleriana</i> <i>Fragaria vesca</i> <i>Senecio wootonii</i> <i>Geranium</i> <i>richardsonii</i> <i>Erigeron</i> spp.	Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Carex foenea</i> H.T.	Pinaleno Moun- tains, Arizona	Warm dry	Climax	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiformis</i>	<i>C. foenea</i>	Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Erigeron eximius</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>E. superbus</i> H.T.]	Mountains of northern New Mexico and Arizona	Cool moist	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. pungens</i> <i>P. engelmannii</i> <i>P. strobiformis</i>	<i>E. superbus</i> (<i>E. eximius</i>) <i>C. foenea</i> <i>Lathyrus arizonicus</i> <i>Prunus virginiana</i>	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979

Table A3.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. concolor</i>	Principal tree associates	Principal understory species	Authority
<i>Abies concolor</i> / <i>Lathyrus arizonicus</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>L. arizonicus</i> H.T.]	San Francisco Peaks, Arizona	Cool dry	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>L. arizonicus</i> <i>G. richardsonii</i>	Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Osmorhiza chilensis</i> H.T.	Wasatch Moun- tains, Utah	Warm moist	Climax	<i>P. menziesii</i> <i>P. tremuloides</i> <i>P. engelmannii</i> <i>A. grandis</i>	<i>O. chilensis</i> <i>P. malvaceus</i> <i>P. myrsinites</i> <i>P. virginiana</i>	Mauk and Hender- son 1984
<i>Abies concolor</i> / Scree H.T.	Mountains of southwestern New Mexico	Cool dry	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. strobiformis</i>	<i>Bromus ciliatus</i> <i>Jamesia americana</i> <i>Koeleria cristata</i>	DeVelice et al. 1984 Fitzhugh et al. 1984
<i>Abies concolor</i> / Sparse H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> H.T.]	Mountains of New Mexico, Arizona, and southern Colo- rado	Warm dry	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. tremuloides</i> <i>P. pungens</i> <i>P. ponderosa</i> <i>P. strobiformis</i>	<i>S. oreophilus</i> <i>R. neomexicana</i> <i>Q. gambelii</i> <i>B. repens</i>	Alexander et al. 1984a DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Pseudotsuga menziesii</i> series						
<i>Pseudotsuga menziesii</i> / <i>Quercus gambelii</i> H.T.	Mountains of northern Arizona	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. strobiformis</i> <i>P. ponderosa</i>	<i>Q. gambelii</i> <i>B. repens</i> <i>R. neomexicana</i> <i>S. oreophilus</i>	Alexander et al. 1984b
<i>Pseudotsuga menziesii</i> / <i>Quercus hypoleucoides</i> H.T.	Mountains of north and central Arizona	Warm dry	Minor climax to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. strobiformis</i> <i>P. ponderosa</i>	<i>Q. hypoleucoides</i> <i>Quercus rugosa</i> <i>Muhlenbergia</i> <i>longiligula</i>	Moir and Ludwig 1979
<i>Pseudotsuga menziesii</i> / <i>Muhlenbergia virescens</i> H.T. [<i>P. menziesii</i> - <i>Pinus strobiformis</i> / <i>M. virescens</i> H.T.]	Mountains of northern Arizona and New Mexico	Warm dry	Minor climax to <i>P. menziesii</i> <i>P. strobiformis</i> . <i>P. ponderosa</i> may be fire climax	<i>P. menziesii</i> <i>P. strobiformis</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. pungens</i>	<i>M. virescens</i> <i>B. ciliatus</i> <i>Pteridium aquilinum</i> <i>Pseudocymopterus</i> <i>montanus</i> <i>G. richardsonii</i>	Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Pseudotsuga menziesii</i> / <i>Holodiscus dumosus</i> H.T. (Scree Forest) [<i>P. menziesii</i> / <i>Physocarpus monogynus</i> H.T.]	Mountains of New Mexico	Warm well- drained	Minor climax to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. pungens</i> <i>P. tremuloides</i>	<i>H. dumosus</i> <i>P. monogynus</i> <i>B. repens</i> <i>P. pratensis</i>	Moir and Ludwig 1979
<i>Pseudotsuga menziesii</i> / Sparse H.T.	Mountains of northern Arizona	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiformis</i>	<i>B. repens</i> <i>B. richardsonii</i> <i>P. fendleriana</i>	Alexander et al. 1984b
<i>Picea pungens</i> series						
<i>Picea pungens</i> / <i>Arctostaphylos uva-ursi</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>A. uva-ursi</i> H.T.]	Mountains of northern New Mexico and southern Colo- rado	Warm dry	Co-climax with <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>A. uva-ursi</i> <i>J. communis</i> <i>F. arizonica</i> <i>Fragaria ovalis</i>	DeVelice et al. 1984 Moir and Ludwig 1979

Table A3.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. concolor</i>	Principal tree associates	Principal understory species	Authority
<i>Picea pungens</i> / <i>Linnaea borealis</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>L. borealis</i> H.T.]	Mountains of southern Colo- rado and northern New Mexico	Cool well- drained	Co-climax with or minor climax to <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. flexilis</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>L. borealis</i> <i>P. myrsinites</i> <i>V. myrtilus</i> <i>R. parviflorus</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Festuca arizonica</i> H.T.	Jemez Moun- tains, New Mex- ico; San Juan Mountains, Colo- rado	Warm dry	Minor climax to <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>F. arizonica</i> <i>C. foenea</i> <i>Erigeron</i> spp. <i>Fragaria</i> spp.	DeVelice et al. 1984
<i>Picea pungens</i> / <i>Poa pratensis</i> H.T.	Mountains of New Mexico	Warm to cool moist	Minor climax to <i>P. pungens</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>P. pratensis</i> <i>E. superbus</i> (<i>E. eximius</i>) <i>G. richardsonii</i> <i>Fragaria virginiana</i>	Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Carex foenea</i> H.T.	White Mountains and Kaibab Plateau, Arizona; Jemez Moun- tains, New Mex- ico	Warm to cool moist	Minor climax to <i>P. pungens</i> <i>P. ponderosa</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. ponderosa</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>C. foenea</i> <i>F. arizonica</i> <i>Muhlenbergia</i> <i>montana</i> <i>B. ciliatus</i> <i>Fragaria</i> spp.	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Erigeron eximius</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> / <i>E. superbus</i> H.T.]	Mountains of Arizona, northern New Mexico, and southern Colo- rado	Cool dry	Co-climax with <i>P. pungens</i> <i>P. menziesii</i> <i>P. engelmannii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. flexilis</i> <i>P. tremuloides</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. strobiformis</i> <i>P. ponderosa</i>	<i>E. superbus</i> (<i>E. eximius</i>) <i>C. foenea</i> <i>G. richardsonii</i> <i>Thalictrum fendleri</i> <i>F. arizonica</i> <i>F. virginiana</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Fragaria ovalis</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>Valeriana acutiloba</i> H.T.]	Mountains of New Mexico and eastern Arizona	Cool moist	Co-climax with <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. strobiformis</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>A. lasiocarpa</i>	<i>F. ovalis</i> <i>V. acutiloba</i> <i>P. pratensis</i> <i>Erodium cicutarium</i> <i>Artemisia</i> <i>dracunculoides</i>	Alexander et al. 1984a Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Senecio cardamine</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> / <i>S. cardamine</i> H.T.]	White Mountains, Arizona	Cool moist	Seral to <i>P. pungens</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>P. pungens</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. ponderosa</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>S. cardamine</i> <i>P. aquilinum</i> <i>Helenium hoopesii</i> <i>Viola canadensis</i>	Moir and Ludwig 1979
<i>Populus tremuloides</i> series and other <i>P. tremuloides</i> dominated vegetation						
<i>Populus tremuloides</i> / <i>Symphoricarpos</i> <i>oreophilus</i> C.T.	Mountains of northern Utah	Warm well- drained	Ultimate climax unknown	<i>P. tremuloides</i>	<i>S. oreophilus</i> <i>P. virginiana</i> <i>B. repens</i>	Mauk and Hender- son 1984
<i>Picea engelmannii</i> series						
<i>Picea engelmannii</i> / <i>Senecio cardamine</i> H.T.	Blue Mountains, Arizona	Cool moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>A. lasiocarpa</i> <i>P. pungens</i> <i>P. strobiformis</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>S. cardamine</i> <i>F. ovalis</i> <i>G. richardsonii</i> <i>V. canadensis</i>	Fitzhugh et al. 1984

Table A3.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. concolor</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> series						
<i>Abies lasiocarpa</i> / <i>Acer glabrum</i> H.T.	Mountains of central and southern Utah	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. pungens</i> <i>P. menziesii</i> <i>P. flexilis</i>	<i>A. glabrum</i> <i>A. alnifolia</i> <i>B. repens</i> <i>S. oreophilus</i> <i>T. fendleri</i> <i>O. chilensis</i>	Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Berberis repens</i> H.T.	Mountains of Utah	Warm-cool well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> (minor climax) <i>P. contorta</i> <i>P. pungens</i> <i>P. menziesii</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>B. repens</i> <i>Ribes montigenum</i> <i>Carex geyeri</i> <i>P. myrsinites</i> <i>S. oreophilus</i> <i>J. communis</i>	Mauk and Hender- son 1984 Pfister 1972 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Juniperus communis</i> H.T.	Mountains of southern Utah, northern Arizona, and New Mexico	Warm to cold dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. pungens</i> (UT)	<i>J. communis</i> <i>Pyrola secunda</i> <i>Arnica cordifolia</i> <i>S. oreophilus</i> <i>R. woodsii</i>	Moir and Ludwig 1979 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of northern Utah	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>A. grandis</i>	<i>P. malvaceus</i> <i>B. repens</i> <i>A. alnifolia</i> <i>S. oreophilus</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984
<i>Abies lasiocarpa</i> / <i>Rubus parviflorus</i> H.T.	Mogollon Moun- tains, New Mex- ico	Warm moist	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>R. parviflorus</i> <i>V. myrtillus</i> <i>A. glabrum</i> <i>P. myrsinites</i>	Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Vaccinium myrtillus</i> H.T. [<i>A. lasiocarpa</i> / <i>V. myrtillus</i> - <i>Linnaea borealis</i> H.T.] [<i>A. lasiocarpa</i> / <i>V. myrtillus</i> - <i>Rubus parviflorus</i> H.T.] [<i>A. lasiocarpa</i> / <i>Vaccinium scoparium</i> - <i>L. borealis</i> H.T.]	Mogollon Plateau, Arizona; moun- tains of northern New Mexico and southern Colo- rado	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>Pinus aristata</i> <i>P. tremuloides</i> <i>P. menziesii</i> <i>P. flexilis</i> <i>P. strobiformis</i> <i>P. pungens</i>	<i>V. myrtillus</i> <i>Disporum</i> <i>trachycarpum</i> <i>Polemonium flavum</i> <i>V. scoparium</i> <i>P. myrsinites</i> <i>A. cordifolia</i> <i>R. parviflorus</i> <i>L. borealis</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Aconitum columbianum</i> H.T.	Mountains of central and southern Utah	Cool moist	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>A. columbianum</i> <i>Actaea rubra</i> <i>A. cordifolia</i> <i>B. ciliatus</i>	Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Erigeron eximius</i> H.T. [<i>A. lasiocarpa</i> / <i>E. superbus</i> H.T.]	Mountains of southwestern Colorado, north- ern New Mexico, and Arizona	Cool dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>P. tremuloides</i>	<i>E. superbus</i> (<i>E. eximius</i>) <i>G. richardsonii</i> <i>L. arizonicus</i> <i>Lonicera involucreta</i> <i>A. cordifolia</i>	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979

Table A4.—Habitat types, community types, and plant communities in which *Picea pungens* is climax, co-climax, minor climax, or seral.

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. pungens</i>	Principal tree associates	Principal understory species	Authority
<i>Picea pungens</i> series						
<i>Picea pungens</i> / <i>Amelanchier alnifolia</i> H.T.	Mountains of western and central Colorado	Warm moist	Climax	<i>Abies lasiocarpa</i> <i>Pseudotsuga menziesii</i> <i>Populus angustifolia</i>	<i>A. alnifolia</i> <i>Cornus stolonifera</i> <i>Carex geyeri</i> <i>Swida sericea</i>	Hess and Wasser 1982 Komarkova 1984
<i>Picea pungens</i> / <i>Arctostaphylos uva-ursi</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>A. uva-ursi</i> H.T.]	Mountains of northern New Mexico and southern Colorado	Warm dry	Co-climax with <i>P. menziesii</i> <i>A. concolor</i>	<i>Abies concolor</i> <i>P. menziesii</i> <i>Pinus ponderosa</i> <i>Populus tremuloides</i> <i>Pinus flexilis</i>	<i>A. uva-ursi</i> <i>Juniperus communis</i> <i>Festuca arizonica</i> <i>Fragaria ovalis</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Berberis repens</i> H.T.	Mountains of Utah	Cool dry	Climax	<i>P. menziesii</i> (minor climax) <i>P. tremuloides</i> <i>Pinus contorta</i> <i>P. ponderosa</i> <i>Juniperus scopulorum</i> <i>P. flexilis</i>	<i>B. repens</i> <i>J. communis</i> <i>Pachistima myrsinites</i> <i>Aquilegia coerulea</i> <i>Pyrola secunda</i> <i>Ribes montigenum</i> <i>Symphoricarpos oreophilus</i>	Mauk and Henderson 1984 Pfister 1972 Youngblood 1984
<i>Picea pungens</i> / <i>Cornus stolonifera</i> H.T.	Mountains of north-central and northwestern New Mexico	Warm moist	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. tremuloides</i> <i>Juniperus</i> spp.	<i>C. stolonifera</i> <i>B. repens</i> <i>P. myrsinites</i> <i>Carex foenea</i>	Alexander et al. 1984c
<i>Picea pungens</i> / <i>Juniperus communis</i> H.T.	Mountains of central Utah	Cool dry	Climax	<i>P. menziesii</i> <i>P. tremuloides</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>S. oreophilus</i> <i>B. repens</i> <i>P. myrsinites</i>	Youngblood 1984
<i>Picea pungens</i> / <i>Linnaea borealis</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>L. borealis</i> H.T.]	Mountains of southern Colorado and northern New Mexico	Cool well-drained	Co-climax with <i>P. menziesii</i> <i>A. concolor</i>	<i>P. menziesii</i> <i>A. concolor</i> <i>P. tremuloides</i> <i>P. flexilis</i> <i>A. lasiocarpa</i> <i>Picea engelmannii</i>	<i>L. borealis</i> <i>P. myrsinites</i> <i>Vaccinium myrtillus</i> <i>Rubus parviflorus</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Agropyron spicatum</i> H.T.	Uinta Mountains, Utah	Warm dry	Climax	<i>P. menziesii</i> <i>P. tremuloides</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>A. spicatum</i> <i>B. repens</i> <i>J. communis</i> <i>P. myrsinites</i>	Mauk and Henderson 1984
<i>Picea pungens</i> / <i>Festuca arizonica</i> H.T.	Mountains of northern New Mexico, and southern and western Colorado	Warm dry	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>A. concolor</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>F. arizonica</i> <i>C. foenea</i> <i>Erigeron</i> spp. <i>Fragaria</i> spp.	DeVelice et al. 1984 Komarkova 1984
<i>Picea pungens</i> / <i>Poa pratensis</i> H.T.	Mountains of New Mexico	Warm to cool moist	Climax	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>A. concolor</i> <i>Pinus strobus</i> <i>formis</i>	<i>P. pratensis</i> <i>E. superbus</i> (<i>E. eximius</i>) <i>Geranium richardsonii</i> <i>Fragaria virginiana</i>	Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Poa</i> spp. H.T.	Mountains of north-central Colorado	Warm moist	Climax	Usually pure stands. May contain <i>P. menziesii</i> <i>P. tremuloides</i>	<i>Poa</i> spp. <i>A. alnifolia</i> <i>Rosa</i> spp. <i>Salix</i> spp.	Hoffman and Alexander 1983

Table A4.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. pungens</i>	Principal tree associates	Principal understory species	Authority
<i>Picea pungens</i> / <i>Carex foenea</i> H.T.	White Mountains and Kaibab Plateau, Arizona; mountains of northern New Mexico	Warm to cool moist	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>A. concolor</i> <i>P. tremuloides</i> <i>P. strobiformis</i> <i>P. engelmannii</i>	<i>C. foenea</i> <i>F. arizonica</i> <i>Muhlenbergia</i> <i>montana</i> <i>Bromus ciliatus</i> <i>Fragaria</i> spp. <i>Festuca</i> spp. <i>B. repens</i>	Alexander et al. 1984c DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Arnica cordifolia</i> H.T.	Front Range, north-central Colorado	Cool moist	Climax	<i>P. menziesii</i> <i>P. tremuloides</i>	<i>A. cordifolia</i> <i>Smilacina stellata</i> <i>J. communis</i> <i>Calamagrostis</i> <i>canadensis</i>	Hess 1981
<i>Picea pungens</i> / <i>Equisetum arvense</i> H.T.	Mountains of southern Utah	Warm to cool wet	Climax	<i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. menziesii</i>	<i>E. arvense</i> <i>G. richardsonii</i> <i>Thalictrum fendleri</i> <i>Osmorhiza chilensis</i>	Youngblood 1984
<i>Picea pungens</i> / <i>Erigeron eximius</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> / <i>E. superbus</i> H.T.]	Mountains of northern New Mexico and southern Colo- rado	Cool dry	Co-climax with <i>A. concolor</i> <i>P. menziesii</i> <i>P. engelmannii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. flexilis</i> <i>P. tremuloides</i> <i>A. lasiocarpa</i> <i>P. ponderosa</i> <i>P. strobiformis</i>	<i>E. superbus</i> (<i>E. eximius</i>) <i>C. foenea</i> <i>G. richardsonii</i> <i>T. fendleri</i> <i>F. arizonica</i> <i>F. virginiana</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Fragaria ovalis</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>Valeriana acutiloba</i> H.T.]	Mountains of New Mexico and eastern Arizona	Cool moist	Co-climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>A. concolor</i> <i>P. strobiformis</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>F. ovalis</i> <i>V. acutiloba</i> <i>C. foenea</i> <i>F. arizonica</i> <i>Erodium circutarium</i> <i>E. superbus</i> (<i>E. eximius</i>) <i>Artemisia dracun- culoides</i>	Alexander et al. 1984a Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Senecio cardamine</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> / <i>S. caradamine</i> H.T.]	White Mountains, Arizona	Cool moist	Co-climax with <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>A. concolor</i> <i>P. ponderosa</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>S. cardamine</i> <i>Pteridium aquilinum</i> <i>Helenium hoopesii</i> <i>Viola canadensis</i>	Moir and Ludwig 1979
<i>Pseudotsuga menziesii</i> series						
<i>Pseudotsuga menziesii</i> / <i>Muhlenbergia virescens</i> H.T.	Mountains of southwestern New Mexico	Warm dry	Minor climax to <i>P. menziesii</i> <i>P. ponderosa</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>P. tremuloides</i>	<i>M. virescens</i> <i>Quercus gambelii</i>	Fitzhugh et al. 1984
<i>Pseudotsuga menziesii</i> / <i>Holodiscus dumosus</i> H.T. (Scree Forests) [<i>P. menziesii</i> / <i>Physocarpus monogynus</i> H.T.]	Mountains of New Mexico	Warm well- drained	Minor climax to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. tremuloides</i> <i>A. concolor</i>	<i>H. dumosus</i> <i>P. monogynus</i> <i>B. repens</i> <i>P. pratensis</i>	Moir and Ludwig 1979
<i>Abies concolor</i> series						
<i>Abies concolor</i> / <i>Acer glabrum</i> H.T.	Mountains of northern Arizona, New Mexico, and southern Colo- rado	Warm moist to well- drained	Minor climax to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>A. glabrum</i> <i>A. alnifolia</i> <i>B. repens</i> <i>P. myrsinites</i>	DeVelice et al. 1984

Table A4.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. pungens</i>	Principal tree associates	Principal understory species	Authority
<i>Abies concolor</i> / <i>Arctostaphylos patula</i> H.T.	Mountains of southern Utah	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. flexilis</i> <i>P. ponderosa</i> <i>J. scopulorum</i>	<i>A. patula</i> <i>S. oreophilus</i> <i>J. communis</i> <i>B. repens</i>	Youngblood 1984
<i>Abies concolor</i> / <i>Berberis repens</i> H.T.	Mountains of central and southern Utah	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>B. repens</i> <i>J. communis</i> <i>S. oreophilus</i> <i>Rosa woodsii</i> <i>P. myrsinites</i>	Youngblood 1984
<i>Abies concolor</i> / <i>Juniperus communis</i> H.T.	Mountains of Utah	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>J. communis</i> <i>S. oreophilus</i> <i>R. woodsii</i> <i>B. repens</i> <i>Carex rossii</i>	Youngblood 1984
<i>Abies concolor</i> / <i>Vaccinium myrtillus</i> H.T.	Mountains of northern New Mexico and southern Colo- rado	Cool dry	Minor climax to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>V. myrtillus</i> <i>A. glabrum</i> <i>A. uva-ursi</i> <i>P. myrsinites</i> <i>R. parviflorus</i>	DeVelice et al. 1984
<i>Abies concolor</i> / <i>Erigeron eximius</i> H.T.	Mountains of northern New Mexico	Cool moist	Minor climax to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. ponderosa</i>	<i>E. eximius</i> (<i>E. superbus</i>) <i>C. foenea</i> <i>Lathyrus</i> spp. <i>Fragaria</i> spp.	DeVelice et al. 1984
<i>Abies concolor</i> / Sparse H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> H.T.]	Mountains of northern New Mexico and southern Colo- rado	Warm dry	Minor climax to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. ponderosa</i> <i>P. strobiformis</i>	<i>S. oreophilus</i> <i>Q. gambelii</i> <i>B. repens</i> <i>Robinia neomex- icana</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea engelmannii</i> series						
<i>Picea engelmannii</i> / <i>Carex disperma</i> H.T.	Mountains of northwestern Wyoming eastern and central Idaho	Cool moist	Occasional co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>C. disperma</i>	Steele et al. 1983
<i>Picea engelmannii</i> / <i>Equisetum arvense</i> H.T.	Mountains of northwestern Wyoming and eastern Idaho	Warm to cool wet	Occasional co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>A. lasiocarpa</i>	<i>E. arvense</i> <i>Streptopus amplexi- folius</i> <i>Senecio triangularis</i> <i>Luzula parviflora</i>	Steele et al. 1983
<i>Picea engelmannii</i> / <i>Galium triflorum</i> H.T.	Mountains of northwestern Wyoming	Cool moist	Occasional co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> <i>A. lasiocarpa</i>	<i>G. triflorum</i> <i>Actaea rubra</i> <i>S. stellata</i>	Steele et al. 1983
<i>Picea engelmannii</i> / <i>Senecio cardamine</i> H.T.	Blue Mountains, Arizona	Cool moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>A. lasiocarpa</i> <i>A. concolor</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>P. tremuloides</i>	<i>S. cardamine</i> <i>F. ovalis</i> <i>G. richardsonii</i> <i>V. canadensis</i>	Fitzhugh et al. 1984

Table A4.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. pungens</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> series						
<i>Abies lasiocarpa</i> / <i>Acer glabrum</i> H.T.	Mountains of central and southern Utah	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>A. concolor</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>A. glabrum</i> <i>A. alnifolia</i> <i>B. repens</i> <i>S. oreophilus</i> <i>O. chilensis</i> <i>T. fendleri</i>	Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Berberis repens</i> H.T.	Mountains of Utah	Warm to cool well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>B. repens</i> <i>R. montigenum</i> <i>J. communis</i> <i>C. geyeri</i> <i>S. oreophilus</i> <i>R. woodsii</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Juniperus communis</i> H.T.	Mountains of southern Utah	Warm to cool dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>A. concolor</i>	<i>J. communis</i> <i>R. woodsii</i> <i>S. oreophilus</i> <i>B. repens</i>	Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Vaccinium myrtillus</i> H.T. [<i>A. lasiocarpa</i> / <i>V. myrtillus</i> - <i>Linnaea borealis</i> H.T.] [<i>A. lasiocarpa</i> / <i>Vaccinium scoparium</i> - <i>L. borealis</i> H.T.]	Mountains of northern New Mexico and southern Colo- rado	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>A. concolor</i> <i>P. tremuloides</i> <i>P. menziesii</i>	<i>V. myrtillus</i> <i>V. scoparium</i> <i>L. borealis</i> <i>E. superbus</i> (<i>E. eximius</i>) <i>F. virginiana</i> <i>P. myrsinites</i> <i>V. canadensis</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Calamagrostis canadensis</i> H.T.	Mountains of northern Utah	Warm wet	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>C. canadensis</i> <i>L. borealis</i> <i>E. arvense</i> <i>G. triflorum</i>	Mauk and Hender- son 1984
<i>Abies lasiocarpa</i> / <i>Actaea rubra</i> H.T.	Mountains of northwestern Wyoming and southern Idaho	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>A. rubra</i> <i>Lonicera utahensis</i> <i>Vaccinium globulare</i> <i>A. glabrum</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Erigeron eximius</i> H.T. [<i>A. lasiocarpa</i> / <i>E. superbus</i> H.T.]	Mountains of Arizona, New Mexico, and southern Colo- rado	Cool dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>A. concolor</i> <i>P. tremuloides</i> <i>P. menziesii</i> <i>P. strobiformis</i>	<i>E. superbus</i> (<i>E. eximius</i>) <i>B. ciliatus</i> <i>F. virginiana</i> <i>Lonicera involucrata</i> <i>A. cordifolia</i>	DeVelice et al. 1984 Moir and Ludwig 1979
Riparian series						
<i>Alnus tenuifolia</i> / <i>Equisetum arvense</i> H.T.	Streambanks, montane zone, north-central Colorado	Warm moist to wet	Minor climax to <i>A. tenuifolia</i>	<i>A. tenuifolia</i> <i>Betula</i> <i>occidentalis</i> <i>P. tremuloides</i>	<i>E. arvense</i> <i>Salix</i> spp. <i>R. woodsii</i> <i>A. glabrum</i>	Hess 1981
<i>Populus angustifolia</i> / <i>Salix exigua</i> H.T.	Streambanks, montane zone, north-central Colorado	Warm moist to wet	Minor climax to <i>P. angustifolia</i>	<i>P. angustifolia</i> <i>P. tremuloides</i> <i>J. scopulorum</i>	<i>Salix</i> spp. <i>A. glabrum</i>	Hess 1981

Table A5.—Habitat types, community types, and plant communities in which *Populus tremuloides* is a major climax, co-climax, minor climax, or seral.

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. tremuloides</i>	Principal tree associates	Principal understory species	Authority
<i>Populus tremuloides</i> series and other <i>P. tremuloides</i> dominated vegetation						
<i>Populus tremuloides</i> - <i>Pseudotsuga menziesii</i> / <i>Amelanchier alnifolia</i> C.T. (ID)	Mountains of southeastern Idaho and western Colorado	Warm dry	Climax (CO); seral to <i>P. menziesii</i> or unknown ultimate climax (ID)	<i>P. menziesii</i> (ID) may occur in pure stands (CO)	<i>A. alnifolia</i> <i>P. virginiana</i> <i>Pachistima myrsinites</i> <i>Symphoricarpos oreophilus</i> <i>Spiraea betulifolia</i> <i>Calamagrostis rubescens</i>	Komarkova 1984 Mueggler and Campbell 1982
<i>P. tremuloides</i> / <i>A. alnifolia</i> C.T. (ID); H.T. (CO)						
<i>P. tremuloides</i> / <i>A. alnifolia</i> - <i>Prunus virginiana</i> P.C. (CO)						
<i>Populus tremuloides</i> / <i>Artemisia tridentata</i> C.T.	Mountains of southeastern Idaho and western Wyoming	Warm dry	Climax or seral to unknown ultimate climax	Usually pure stands	<i>A. tridentata</i> <i>Bromus carinatus</i> <i>S. oreophilus</i> <i>Melica spectabilis</i> <i>Purshia tridentata</i> <i>Festuca idahoensis</i>	Mueggler and Campbell 1982 Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Berberis repens</i> C.T.	Mountains of western Wyoming	Warm to cool. Well-drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>Picea engelmannii</i> <i>Pinus contorta</i> <i>Pinus flexilis</i>	<i>B. repens</i> <i>Symphoricarpos albus</i> <i>P. myrsinites</i>	Youngblood and Mueggler 1981
<i>P. tremuloides</i> / <i>B. repens</i> C.T.						
<i>Populus tremuloides</i> - <i>Corylus cornuta</i> H.T.	Black Hills and Bearlodge Mountains, South Dakota and eastern Wyoming	Warm well-drained	Climax or seral to unknown ultimate climax	<i>Betula papyrifera</i>	<i>C. cornuta</i> <i>Aralia nudicaulis</i> <i>Aster ciliolatus</i> <i>Osmorhiza chilensis</i> <i>Pteridium aquilinum</i>	Hoffman 1984
<i>Populus tremuloides</i> / <i>Juniperus communis</i> H.T. (UT); C.T. (WY)	Mountains of western Wyoming; Uinta Mountains, Utah	Warm dry	Climax or seral to unknown ultimate climax	Usually pure stands. May contain <i>P. flexilis</i> <i>P. contorta</i>	<i>J. communis</i> <i>B. repens</i> <i>Shepherdia canadensis</i> <i>Rosa woodsii</i>	Mauk and Henderson 1984 Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Pachistima myrsinites</i> C.T. (ID); P.C. (CO)	Mountains of southeastern Idaho, central and southwestern Colorado	Warm dry	Seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> may be pure stands (ID)	<i>P. myrsinites</i> <i>Vaccinium scoparium</i> <i>Carex geyeri</i> <i>C. rubescens</i> <i>Geranium viscosissimum</i>	Mueggler and Campbell 1982 Steen and Dix 1974
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Prunus virginiana</i> C.T., <i>P. tremuloides</i> / <i>P. virginiana</i> C.T.	Mountains of western Wyoming	Warm dry	Seral to either <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>P. virginiana</i> <i>B. repens</i> <i>S. oreophilus</i> <i>R. woodsii</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Shepherdia canadensis</i> C.T., <i>P. tremuloides</i> / <i>S. canadensis</i> C.T.	Mountains of western Wyoming	Cool-dry to well-drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. engelmannii</i> <i>P. flexilis</i>	<i>S. canadensis</i> <i>G. viscosissimum</i> <i>Arnica cordifolia</i> <i>R. woodsii</i> <i>Thalictrum fendleri</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Pseudotsuga menziesii</i> / <i>Spiraea betulifolia</i> C.T., <i>P. tremuloides</i> / <i>S. betulifolia</i> C.T.	Mountains of southeastern Idaho and western Wyoming	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i>	<i>S. betulifolia</i> <i>A. alnifolia</i> <i>B. repens</i> <i>C. rubescens</i>	Mueggler and Campbell 1982 Youngblood and Mueggler 1981

Table A5.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. tremuloides</i>	Principal tree associates	Principal understory species	Authority
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Symphoricarpos</i> <i>oreophilus</i> C.T., <i>P. tremuloides</i> / <i>S. oreophilus</i> H.T. (CO); C.T. (WY,ID,UT)	Mountains of southeastern Idaho, northern Utah, western Wyoming, north- ern, western and central Colorado	Warm well- drained	Climax or seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>Abies concolor</i> <i>P. menziesii</i> may be pure stands (CO)	<i>S. oreophilus</i> <i>P. virginiana</i> <i>B. repens</i> <i>Elymus glaucus</i> <i>G. viscosissimum</i> <i>Lupinus argenteus</i> <i>Rudbeckia</i> <i>occidentalis</i> <i>Poa pratensis</i> <i>C. rubescens</i> <i>C. geyeri</i> <i>A. alnifolia</i>	Hess and Wasser 1982 Hoffmann and Alexander 1980, 1983 Komarkova 1984 Mauk and Hender- son 1984 Mueggler and Campbell 1982 Steele et al. 1983 Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Pseudotsuga menziesii</i> / <i>Symphoricarpos</i> <i>oreophilus</i> C.T., <i>P. tremuloides</i> / <i>S. oreophilus</i> C.T.	Mountains of southeastern Idaho	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>A. lasiocarpa</i> <i>P. contorta</i>	<i>S. oreophilus</i> <i>C. rubescens</i> <i>P. pratensis</i> <i>R. occidentalis</i> <i>C. geyeri</i>	Mueggler and Campbell 1982
<i>Populus tremuloides</i> / <i>Wyethia amplexicaulis</i> C.T.	Mountains of southeastern Idaho and western Wyoming	Cool well- drained	Climax or seral to unknown ultimate climax	Usually pure stands	<i>W. amplexicaulis</i> <i>R. occidentalis</i>	Mueggler and Campbell 1982 Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Pinus contorta</i> / <i>Calamagrostis rubescens</i> C.T., <i>P. tremuloides</i> / <i>C. rubescens</i> C.T.	Mountains of southeastern Idaho	Warm dry	Seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>C. rubescens</i> <i>S. oreophilus</i> <i>P. myrsinites</i> <i>L. argenteus</i> <i>T. fendleri</i> <i>G. viscosissimum</i>	Mueggler and Campbell 1982
<i>Populus tremuloides</i> - <i>Pseudotsuga menziesii</i> / <i>Calamagrostis rubescens</i> C.T., <i>P. tremuloides</i> / <i>C. rubescens</i> C.T.	Mountains of southeastern Idaho and western Wyoming	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. contorta</i> may be pure stands	<i>C. rubescens</i> <i>S. oreophilus</i> <i>T. fendleri</i> <i>A. cordifolia</i> <i>L. argenteus</i>	Mueggler and Campbell 1982 Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Elymus glaucus</i> P.C.	Mountains of central and southwestern Colorado	Warm moist to well- drained	Seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i>	<i>E. glaucus</i> <i>A. alnifolia</i> <i>Symphoricarpos</i> spp. <i>Ligusticum porteri</i>	Steen and Dix 1974
<i>Populus tremuloides</i> / <i>Festuca thurberi</i> H.T. P.C.	Mountains of Colorado	Warm dry	Climax or seral to unknown ultimate climax	Usually pure stands but may contain <i>P. contorta</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>F. thurberi</i> <i>B. repens</i> <i>S. oreophilus</i> <i>Fragaria ovalis</i>	Hess 1981 Hess and Wasser 1982 Komarkova 1984 Steen and Dix 1974
<i>Populus tremuloides</i> / <i>Poa pratensis</i> C.T.	Mountains of southeastern Idaho	Warm dry	Seral to unknown ultimate climax	<i>P. menziesii</i> <i>A. lasiocarpa</i> may be pure stands	<i>P. pratensis</i> <i>P. nervosa</i> <i>Physocarpus</i> <i>monogynous</i> <i>Smilacina stellata</i> <i>C. rubescens</i> <i>T. fendleri</i>	Mueggler and Campbell 1982

Table A5.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. tremuloides</i>	Principal tree associates	Principal understory species	Authority
<i>Populus tremuloides</i> / <i>Carex geyeri</i> H.T.	Uinta Mountains, Utah; mountains of southern Wyo- ming and north- central Colorado	Warm to cool. Dry to well- drained	Climax	Usually pure stands	<i>G. geyeri</i> <i>J. communis</i> <i>A. cordifolia</i> <i>Lathyrus leucanthus</i>	Hess 1981 Hoffman and Alex- ander 1983 Mauk and Hender- son 1984 Wirsing and Alex- ander 1975
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Arnica cordifolia</i> C.T., <i>P. tremuloides</i> / <i>A. cordifolia</i> C.T.	Mountains of western Wyoming	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i>	<i>A. cordifolia</i> <i>S. oreophilus</i> <i>Carex rossii</i> <i>O. chilensis</i> <i>Poa nervosa</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Astragalus miser</i> C.T.	Mountains of western Wyoming	Warm dry	Climax or seral to unknown ultimate climax	<i>P. flexilis</i>	<i>A. miser</i> <i>L. argenteus</i> <i>G. viscosissimum</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Equisetum arvense</i> C.T.	Mountains of western Wyoming	Cool wet	Seral to <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. contorta</i>	<i>E. arvense</i> <i>E. glaucus</i> <i>T. fendleri</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Geranium viscosissimum</i> C.T.	Mountains of southeastern Idaho	Warm dry	Climax or seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> may be pure stands	<i>G. viscosissimum</i> <i>Symphoricarpos</i> spp. <i>L. argenteus</i> <i>T. fendleri</i>	Mueggler and Campbell 1982
<i>Populus tremuloides</i> / <i>Heracleum lanatum</i> H.T. (CO); C.T. (WY) [<i>Populus tremuloides</i> / <i>Heracleum sphondylium</i> H.T.]	Mountains of western Wyo- ming, north- western and north-central Colorado	Warm moist	Climax (CO) or seral to <i>A. lasiocarpa</i> (WY)	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> usually pure stands (CO)	<i>H. lanatum</i> <i>H. sphondylium</i> <i>Pedicularis</i> <i>bracteosa</i> <i>T. fendleri</i> <i>E. glaucus</i> <i>Bromus ciliatus</i>	Hess and Wasser 1982 Hoffman and Alex- ander 1980, 1983 Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Ligusticum filicinum</i> C.T. <i>P. tremuloides</i> / <i>L. filicinum</i> C.T.	Mountains of western Wyoming	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>L. filicinum</i> <i>T. fendleri</i> <i>G. viscosissimum</i> <i>Osmorhiza occiden- talis</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Lupinus argenteus</i> H.T.	Bighorn Moun- tains, Wyoming	Warm well- drained	Climax	Usually pure stands	<i>Lupinus</i> spp. <i>Carex</i> spp. <i>Trifolium</i> spp.	Hoffman and Alex- ander 1976
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Pedicularis racemosa</i> C.T.	Mountains of western Wyoming	Cool moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i>	<i>P. racemosa</i> <i>A. cordifolia</i> <i>S. oreophilus</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Pteridium aquilinum</i> H.T. (CO)	Mountains of western and north-central Colorado	Warm poorly- drained	Climax	Usually pure stands	<i>P. aquilinum</i> <i>T. fendleri</i> <i>E. glaucus</i> <i>C. geyeri</i> <i>Melica subulata</i>	Hoffman and Alex- ander 1980, 1983 Komarkova 1984
<i>Populus tremuloides</i> / <i>Ranunculus alismaefolius</i> C.T.	Mountains of western Wyoming	Cool moist to wet	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>R. alismaefolius</i> <i>Carex microptera</i> <i>Trifolium longipes</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Rudbeckia occidentalis</i> C.T., <i>P. tremuloides</i> / <i>R. occidentalis</i> C.T.	Mountains of southeastern Idaho and western Wyoming	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>R. occidentalis</i> <i>T. longipes</i> <i>Nemophila brevifolia</i> <i>M. spectabilis</i> <i>Symphoricarpos</i> spp.	Mueggler and Campbell 1982 Youngblood and Mueggler 1981

Table A5.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. tremuloides</i>	Principal tree associates	Principal understory species	Authority
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Thalictrum fendleri</i> C.T. (ID), <i>P. tremuloides</i> / <i>T. fendleri</i> H.T. (CO); C.T. (WY)	Mountains of southeastern Idaho; western Wyoming, and Colorado	Warm moist to well- drained	Climax (CO) <i>P. menziesii</i> ultimate climax (WY). Seral to <i>A. lasiocarpa</i> (ID)	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. flexilis</i> may be pure stands (CO)	<i>T. fendleri</i> <i>C. geyseri</i> <i>E. glaucus</i> <i>S. oreophilus</i> <i>G. viscosissimum</i>	Hess 1981 Hess and Wasser 1982 Hoffman and Alex- ander 1980, 1983 Komarkova 1984 Mueggler and Campbell 1982 Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Veratrum tenuipetalum</i> H.T.	Mountains of northwestern Colorado	Cool wet	Climax	Usually pure stands	<i>V. tenuipetalum</i> <i>Mertensia ciliata</i> <i>L. porteri</i> <i>B. ciliatus</i>	Hoffman and Alex- ander 1980
<i>Pinus ponderosa</i> series						
<i>Pinus ponderosa</i> / <i>Symphoricarpos albus</i> H.T.	Mountains of central Idaho; Black Hills and Bearlodge Moun- tains, South Dakota and eastern Wyoming	Warm dry to well- drained	Seral to <i>P. ponderosa</i>	<i>P. ponderosa</i> (not in all stands in SD and WY)	<i>S. albus</i> <i>S. betulifolia</i> <i>Rosa</i> spp. <i>Juniperus</i> <i>communis</i> <i>Balsamorhiza</i> <i>sagittata</i> <i>Oryzopsis asperifolia</i>	Hoffman 1984 Steele et al. 1981
<i>Pinus ponderosa</i> / <i>Symphoricarpos</i> <i>oreophilus</i> H.T.	Mountains of central Utah	Warm dry	Seral to <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>J. scopulorum</i>	<i>S. oreophilus</i> <i>B. repens</i> <i>C. rossii</i> <i>Muhlenbergia mon-</i> <i>tana</i>	Youngblood 1984
<i>Pinus ponderosa</i> / <i>Festuca idahoensis</i> H.T.	Uinta Mountains, Utah	Warm dry	Seral to <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>P. contorta</i> <i>J. scopulorum</i>	<i>F. idahoensis</i> <i>Arctostaphylos</i> <i>patula</i> <i>A. tridentata</i>	Mauk and Hender- son 1984
<i>Pinus ponderosa</i> / <i>Carex geyseri</i> H.T.	Uinta Mountains, Utah	Warm dry	Seral to <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>P. contorta</i>	<i>C. geyseri</i> <i>A. alnifolia</i> <i>B. repens</i> <i>P. nervosa</i>	Mauk and Hender- son 1984
<i>Pinus flexilis</i> series						
<i>Pinus flexilis</i> / <i>Arctostaphylos uva-ursi</i> H.T.	Mountains of northern New Mexico and southern Colo- rado	Warm dry	Seral to <i>P. flexilis</i> <i>P. menziesii</i>	<i>P. flexilis</i> <i>P. menziesii</i> <i>P. engelmannii</i>	<i>A. uva-ursi</i> <i>J. communis</i>	DeVelice et al. 1984
<i>Pinus flexilis</i> / <i>Juniperus communis</i> H.T.	Mountains of north-central Colorado	Warm dry	Seral to <i>P. flexilis</i>	<i>P. flexilis</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. contorta</i>	<i>J. communis</i> <i>C. rossii</i> <i>Geranium fremontii</i>	Hess 1981
<i>Pinus flexilis</i> - <i>Pinus longaeva</i> H.T.	Mountains of central and southern Utah	Warm dry	Seral to <i>P. flexilis</i> <i>P. longaeva</i>	<i>P. flexilis</i> <i>P. longaeva</i> <i>P. menziesii</i> <i>J. scopulorum</i>	<i>S. oreophilus</i> <i>J. communis</i> <i>B. repens</i> <i>C. rossii</i> <i>A. miser</i>	Youngblood 1984

Table A5.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. tremuloides</i>	Principal tree associates	Principal understory species	Authority
<i>Pseudotsuga menziesii</i> series						
<i>Pseudotsuga menziesii</i> / <i>Acer glabrum</i> H.T.	Mountains of eastern Idaho, northern Utah, and northwestern Wyoming	Cool moist	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. flexilis</i> <i>Juniperus</i> <i>scopulorum</i> <i>P. contorta</i> <i>Abies grandis</i> (UT)	<i>A. glabrum</i> <i>S. oreophilus</i> <i>A. alnifolia</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984 Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> / <i>Arctostaphylos uva-ursi</i> H.T.	Mountains of southwestern New Mexico	Warm dry	Seral to <i>P. menziesii</i> <i>P. flexilis</i>	<i>P. menziesii</i> <i>P. strobiformis</i> <i>P. ponderosa</i> <i>P. flexilis</i>	<i>A. uva-ursi</i> <i>J. communis</i>	Fitzhugh et al. 1984
<i>Pseudotsuga menziesii</i> / <i>Berberis repens</i> H.T.	Mountains of southeastern Idaho, northern Utah, and north- western Wyoming	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. flexilis</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>J. scopulorum</i> <i>A. grandis</i>	<i>B. repens</i> <i>S. oreophilus</i> <i>C. geayeri</i> <i>J. communis</i> <i>A. cordifolia</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Pseudotsuga menziesii</i> / <i>Cercocarpus ledifolius</i> H.T.	Mountains of cen- tral and southern Utah	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>Pinus edulis</i> <i>P. longaeva</i> <i>P. ponderosa</i>	<i>C. ledifolius</i> <i>B. oreophilus</i> <i>A. tridentata</i> <i>B. repens</i>	Youngblood 1984
<i>Pseudotsuga menziesii</i> / <i>Pachistima myrsinites</i> H.T.	Mountains of northwestern Colorado	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i>	<i>P. myrsinites</i> <i>S. oreophilus</i> <i>A. glabrum</i> <i>Quercus gambelii</i>	Hoffman and Alex- ander 1983
<i>Pseudotsuga menziesii</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of cen- tral Utah	Cool moist to well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. contorta</i> <i>J. scopulorum</i> <i>A. grandis</i>	<i>P. malvaceus</i> <i>P. virginiana</i> <i>Holodiscus discolor</i> <i>S. albus</i> <i>P. myrsinites</i> <i>B. repens</i>	Mauk and Hender- son 1984 Youngblood 1984
<i>Pseudotsuga menziesii</i> / <i>Symphoricarpos albus</i> H.T.	Mountains of eastern Idaho and northwestern Wyoming	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. contorta</i> <i>P. flexilis</i>	<i>S. albus</i> <i>S. betulifolia</i> <i>A. uva-ursi</i> <i>B. repens</i>	Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> / <i>Symphoricarpos</i> <i>oreophilus</i> H.T.	Mountains of northern and cen- tral Utah	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>J. scopulorum</i> <i>P. flexilis</i> <i>P. contorta</i>	<i>S. oreophilus</i> <i>Ribes montigenum</i> <i>A. tridentata</i> <i>Stellaria jamesiana</i> <i>B. repens</i>	Mauk and Hender- son 1984 Youngblood 1984
<i>Pseudotsuga menziesii</i> / <i>Bromus ciliatus</i> H.T.	Mountains of north-central and northwestern New Mexico	Warm moist	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiformis</i>	<i>B. ciliatus</i> <i>A. glabrum</i> <i>Carex</i> spp.	Alexander et al. 1984c
<i>Pseudotsuga menziesii</i> / <i>Calamagrostis rubescens</i> H.T.	Mountains of eastern Idaho and northwestern Wyoming	Warm to cool dry to well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>P. contorta</i>	<i>C. rubescens</i> <i>C. geayeri</i> <i>A. cordifolia</i> <i>A. uva-ursi</i> <i>P. myrsinites</i>	Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> / <i>Festuca arizonica</i> H.T.	Mountains of northern Arizona and New Mexico	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>Pinus strobi-</i> <i>formis</i> <i>P. ponderosa</i> <i>P. flexilis</i>	<i>F. arizonica</i> <i>M. montana</i> <i>Koeleria cristata</i> <i>Erigeron subtrinervis</i>	Alexander et al. 1984c DeVilce et al. 1984 Moir and Ludwig 1979

Table A5.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. tremuloides</i>	Principal tree associates	Principal understory species	Authority
<i>Pseudotsuga menziesii</i> / <i>Muhlenbergia virescens</i> H.T.	Mountains of southwestern New Mexico and Arizona	Warm dry	Seral to <i>P. menziesii</i> <i>P. ponderosa</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>Picea pungens</i> <i>P. strobiformis</i>	<i>M. virescens</i> <i>Q. gambelii</i> <i>C. rossii</i> <i>Poa fendleriana</i>	Alexander et al. 1984b Fitzhugh et al. 1984
<i>Pseudotsuga menziesii</i> / <i>Holodiscus dumosus</i> H.T. (Scree Forest) [<i>P. menziesii</i> / <i>Physocarpus monogynus</i> H.T.]	Mountains of New Mexico	Warm dry to well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. strobiformis</i> <i>A. concolor</i> <i>P. pungens</i>	<i>H. dumosus</i> <i>Salix</i> spp. <i>S. oreophilus</i> <i>B. ciliatus</i> <i>P. monogynus</i>	Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Pseudotsuga menziesii</i> / <i>Osmorhiza chilensis</i> H.T.	Mountains of southern Idaho and northern Utah	Warm well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. contorta</i> <i>A. grandis</i> <i>J. scopulorum</i>	<i>O. chilensis</i> <i>Smilacina racemosa</i> <i>Viola nuttallii</i> <i>P. virginiana</i> <i>A. cordifolia</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Abies concolor</i> series						
<i>Abies concolor</i> / <i>Acer glabrum</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>A. glabrum</i> H.T.]	Mountains of southern Utah, New Mexico, Arizona, and southern Colo- rado	Warm moist to well- drained	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>P. menziesii</i> <i>A. concolor</i> <i>P. strobiformis</i> <i>P. pungens</i> <i>P. engelmannii</i> <i>P. ponderosa</i> (NM) <i>A. lasiocarpa</i>	<i>A. glabrum</i> <i>B. repens</i> <i>Q. gambelii</i> <i>Holodiscus dumosus</i> <i>P. myrsinites</i> <i>B. repens</i>	Alexander et al. 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979 Youngblood 1984
<i>Abies concolor</i> / <i>Acer grandidentatum</i> H.T.	Mountains of northern Arizona	Cool moist to warm well- drained	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. strobiformis</i> <i>P. ponderosa</i>	<i>A. grandidentatum</i> <i>Q. gambelii</i> <i>Carex foenea</i>	Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Arctostaphylos uva-ursi</i> H.T.	Mountains of northern New Mexico and southern Colo- rado	Warm dry	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. flexilis</i>	<i>A. uva-ursi</i> <i>P. myrsinites</i>	DeVelice et al. 1984
<i>Abies concolor</i> / <i>Berberis repens</i> H.T.	Mountains of Utah	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>A. grandis</i> <i>P. flexilis</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>P. pungens</i>	<i>B. repens</i> <i>S. oreophilus</i> <i>Osmorhiza</i> spp. <i>L. leucanthus</i> <i>J. communis</i> <i>R. woodsii</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984 Youngblood 1984
<i>Abies concolor</i> / <i>Juglans major</i> H.T.	Mountains of southern New Mexico	Warm moist	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>Populus angusti- folia</i> <i>Fraxinus penn- sylvanica</i>	<i>J. major</i> <i>Q. gambelii</i> <i>P. pratensis</i> <i>Vitis arizonica</i>	Alexander et al. 1984a Fitzhugh et al. 1984
<i>Abies concolor</i> / <i>Juniperus communis</i> H.T.	Mountains of central and southern Utah	Warm to cold dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. pungens</i> <i>P. menziesii</i> <i>P. flexilis</i>	<i>J. communis</i> <i>S. oreophilus</i> <i>R. woodsii</i> <i>B. repens</i> <i>C. rossii</i>	Youngblood 1984

Table A5.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. tremuloides</i>	Principal tree associates	Principal understory species	Authority
<i>Abies concolor</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of northern Utah	Warm moist	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>A. grandis</i> <i>J. scopulorum</i>	<i>P. malvaceus</i> <i>Mitella stauropetala</i> <i>S. racemosa</i> <i>S. oreophilus</i>	Mauk and Hender- son 1984
<i>Abies concolor</i> / <i>Quercus gambelii</i> [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>Q. gambelii</i> H.T.]	Mountains of New Mexico, Arizona, and southern Colo- rado	Warm dry	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>J. scopulorum</i>	<i>Q. gambelii</i> <i>M. virescens</i> <i>F. arizonica</i>	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Robinia neomexicana</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>R. neomexicana</i> H.T.]	Mountains of New Mexico and Arizona	Warm dry	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>P. engelmannii</i>	<i>R. neomexicana</i> <i>S. oreophilus</i> <i>Q. gambelii</i>	Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Symphoricarpos</i> <i>oreophilus</i> H.T.	Mountains of central and southern Utah	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>J. scopulorum</i>	<i>S. oreophilus</i> <i>R. woodsii</i> <i>A. alnifolia</i> <i>C. rossii</i> <i>P. fendleriana</i>	Youngblood 1984
<i>Abies concolor</i> / <i>Vaccinium myrtillus</i> H.T.	Mountains of northern New Mexico and southern Colo- rado	Cool dry	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. pungens</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>V. myrtillus</i> <i>A. glabrum</i> <i>A. uva-ursi</i> <i>P. myrsinites</i> <i>Rubus parviflorus</i>	DeVelice et al. 1984
<i>Abies concolor</i> / <i>Elymus triticoides</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>E. triticoides</i> H.T.]	Capitan Moun- tains, New Mex- ico	Warm dry	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiformis</i>	<i>E. triticoides</i> <i>Bromus richardsonii</i>	Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Festuca arizonica</i> H.T.	Mountains of northern New Mexico	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiformis</i>	<i>Q. gambelii</i> <i>F. arizonica</i> <i>Muhlenbergia</i> spp.	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Poa fendleriana</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>P. fendleriana</i> H.T.]	White Mountains, Arizona	Warm dry	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. strobiformis</i> <i>P. ponderosa</i>	<i>P. fendleriana</i> <i>Fragaria vesca</i> <i>Senecio wootonii</i> <i>Achillea lanulosa</i> <i>Geranium</i> <i>richardsonii</i> <i>Erigeron</i> spp.	Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Erigeron eximius</i> H.T. [<i>A. concolor</i> / <i>Pseudotsuga menziesii</i> / <i>E. superbus</i> H.T.]	Mountains of northern New Mexico and Arizona	Cool moist	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. pungens</i> <i>P. engelmannii</i> <i>P. ponderosa</i> <i>P. strobiformis</i>	<i>E. superbus</i> (<i>E. eximius</i>) <i>C. foenea</i> <i>Lathyrus arizonicus</i> <i>Fragaria virginiana</i>	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Lathyrus arizonicus</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>L. arizonicus</i> H.T.]	San Francisco Peaks, Arizona	Cool dry	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. ponderosa</i>	<i>L. arizonicus</i> <i>G. richardsonii</i>	Moir and Ludwig 1979

Table A5.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. tremuloides</i>	Principal tree associates	Principal understory species	Authority
<i>Abies concolor</i> / <i>Osmorhiza chilensis</i> H.T.	Wasatch Moun- tains, Utah	Warm moist	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>A. grandis</i>	<i>O. chilensis</i> <i>P. malvaceus</i> <i>P. myrsinites</i> <i>P. virginiana</i>	Mauk and Hender- son 1984
<i>Abies concolor</i> / Sparse H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> H.T.]	Mountains of New Mexico, Arizona, and southern Colo- rado	Warm dry	Seral to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. pungens</i> <i>P. strobiformis</i> <i>P. ponderosa</i>	<i>S. oreophilus</i> <i>R. neomexicana</i> <i>Q. gambelii</i> <i>B. repens</i>	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> series						
<i>Picea pungens</i> / <i>Arctostaphylos uva-ursi</i> [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>A. uva-ursi</i> H.T.]	Mountains of northern New Mexico and southern Colo- rado	Warm dry	Seral to <i>P. pungens</i> <i>P. menziesii</i> <i>A. concolor</i>	<i>A. concolor</i> <i>P. pungens</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. flexilis</i>	<i>A. uva-ursi</i> <i>J. communis</i> <i>F. arizonica</i> <i>F. ovalis</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Berberis repens</i> H.T.	Mountains of Utah	Cool dry	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. menziesii</i> (minor climax) <i>P. contorta</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>B. repens</i> <i>J. communis</i> <i>P. myrsinites</i> <i>Aquilegia caerulea</i> <i>Pyrola secunda</i> <i>R. montigenum</i> <i>S. oreophilus</i>	Mauk and Hender- son 1984 Youngblood 1984
<i>Picea pungens</i> / <i>Cornus stolonifera</i> H.T.	Mountains of north-central and northwestern New Mexico	Warm moist	Seral to <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>Juniperus</i> spp.	<i>C. stolonifera</i> <i>B. repens</i> <i>P. myrsinites</i> <i>C. foenea</i>	Alexander et al. 1984c
<i>Picea pungens</i> / <i>Juniperus communis</i> H.T.	Mountains of central Utah	Cool dry	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>J. scopulorum</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>S. oreophilus</i> <i>B. repens</i> <i>P. myrsinites</i>	Youngblood 1984
<i>Picea pungens</i> / <i>Linnaea borealis</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>L. borealis</i> H.T.]	Sangre de Cristo Mountains, south- ern Colorado and northern New Mexico	Cool well- drained	Seral to <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. flexilis</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>L. borealis</i> <i>P. myrsinites</i> <i>V. myrtillus</i> <i>R. parviflorus</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Agropyron spicatum</i> H.T.	Uinta Mountains, Utah	Warm dry	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. flexilis</i> <i>J. scopulorum</i> <i>P. ponderosa</i>	<i>A. spicatum</i> <i>B. repens</i> <i>J. communis</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984
<i>Picea pungens</i> / <i>Festuca arizonica</i> H.T.	Jemez Moun- tains, New Mex- ico; San Juan Mountains, Colo- rado	Warm dry	Seral to <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. ponderosa</i>	<i>F. arizonica</i> <i>C. foenea</i> <i>Erigeron</i> spp. <i>Fragaria</i> spp.	DeVelice et al. 1984
<i>Picea pungens</i> / <i>Poa pratensis</i> H.T.	Mountains of New Mexico	Warm to cool moist	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>A. concolor</i> <i>P. strobiformis</i>	<i>P. pratensis</i> <i>E. superbus</i> (<i>E. eximius</i>) <i>G. richardsonii</i> <i>F. virginiana</i>	Fitzhugh et al. 1984 Moir and Ludwig 1979

Table A5.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. tremuloides</i>	Principal tree associates	Principal understory species	Authority
<i>Picea pungens</i> / <i>Carex foenea</i> H.T.	White Mountains and Kaibab Plateau, Arizona; mountains of northern New Mexico	Warm to cool moist	Seral to <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. pungens</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. pungens</i> <i>P. strobiformis</i> <i>A. concolor</i>	<i>C. foenea</i> <i>F. arizonica</i> <i>B. ciliatus</i>	Alexander et al. 1984c DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Arnica cordifolia</i> H.T.	Mountains of southern Wyo- ming, northern and central Colo- rado	Cool moist	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. menziesii</i>	<i>A. cordifolia</i> <i>S. stellata</i> <i>J. communis</i> <i>Calamagrostis</i> <i>canadensis</i>	Hess 1981
<i>Picea pungens</i> / <i>Equisetum arvense</i> H.T.	Mountains of southern Utah	Warm to cool wet	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. engelmannii</i> <i>P. menziesii</i>	<i>E. arvense</i> <i>G. richardsonii</i> <i>T. fendleri</i> <i>O. chilensis</i>	Youngblood 1984
<i>Picea pungens</i> / <i>Erigeron eximius</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> / <i>E. superbus</i> H.T.]	Mountains of Arizona, northern New Mexico, and southern Colo- rado	Cool dry	Seral to <i>P. pungens</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>A. concolor</i>	<i>P. pungens</i> <i>A. lasiocarpa</i> (minor climax) <i>P. menziesii</i> <i>A. concolor</i> <i>P. engelmannii</i> <i>P. strobiformis</i> <i>P. ponderosa</i> <i>P. flexilis</i>	<i>E. superbus</i> (<i>E. eximius</i>) <i>F. arizonica</i> <i>C. foenea</i> <i>F. virginiana</i> <i>G. richardsonii</i> <i>T. fendleri</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> <i>Fragaria ovalis</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>Valeriana acutiloba</i> H.T.]	Mountains of New Mexico and eastern Arizona	Cool moist	Seral to <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. strobiformis</i> <i>P. ponderosa</i> <i>A. concolor</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>F. ovalis</i> <i>V. acutiloba</i> <i>C. foenea</i> <i>F. arizonica</i> <i>E. superbus</i>	Alexander et al. 1984a Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Senecio cardamine</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> / <i>S. cardamine</i> H.T.]	White Mountains, Arizona	Cool moist	Seral to <i>P. pungens</i> <i>P. engelmannii</i>	<i>P. pungens</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> (minor climax) <i>P. menziesii</i> <i>A. concolor</i> <i>P. strobiformis</i> <i>P. ponderosa</i>	<i>S. cardamine</i> <i>P. aquilinum</i> <i>Helenium hoopesii</i> <i>Viola canadensis</i>	Moir and Ludwig 1979
<i>Picea glauca</i> series						
<i>Picea glauca</i> / <i>Linnaea borealis</i> H.T.	Black Hills and Bearlodge Moun- tains, South Dakota and eastern Wyoming	Cool well- drained	Seral to <i>P. glauca</i>	<i>P. glauca</i> <i>P. ponderosa</i> <i>B. papyrifera</i>	<i>L. borealis</i> <i>S. canadensis</i> <i>Lonicera dioica</i>	Hoffman 1984
<i>Picea glauca</i> / <i>Vaccinium scoparium</i> H.T.	Black Hills and Bearlodge Moun- tains, South Dakota and eastern Wyoming	Cool well- drained	Seral to <i>P. glauca</i>	<i>P. glauca</i> <i>P. ponderosa</i> <i>B. papyrifera</i>	<i>V. scoparium</i> <i>Clematis tenuiloba</i>	Hoffman 1984
<i>Abies grandis</i> series						
<i>Abies grandis</i> / <i>Spiraea betulifolia</i> H.T.	Mountains of central Idaho	Warm dry	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. menziesii</i> <i>P. ponderosa</i>	<i>S. betulifolia</i> <i>C. rubescens</i> <i>A. cordifolia</i>	Steele et al. 1981

Table A5.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. tremuloides</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus contorta</i> series and other <i>P. contorta</i> dominated vegetation						
<i>Pinus contorta</i> / <i>Arctostaphylos uva-ursi</i> H.T. (UT); P.C. (CO)	Uinta Mountains, Utah; mountains of central Colo- rado	Warm dry well- drained	Seral to <i>P. contorta</i> (UT) or to unknown ultimate climax (CO)	<i>P. contorta</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. uva-ursi</i> <i>B. repens</i> <i>Sitanion hystrix</i>	Mauk and Hender- son 1984 Steen and Dix 1974
<i>Pinus contorta</i> / <i>Berberis repens</i> C.T.	Uinta Mountains, Utah	Cool dry to well- drained	Seral to unknown ultimate climax	<i>P. contorta</i>	<i>B. repens</i> <i>C. geyeri</i> <i>P. myrsinites</i> <i>J. communis</i>	Mauk and Hender- son 1984
<i>Pinus contorta</i> / <i>Juniperus communis</i> H.T. (CO); CT (UT)	Mountains of northern Utah; north-central Colorado	Warm dry	Seral to <i>P. contorta</i> (CO) or unknown ultimate climax (UT)	<i>P. contorta</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>S. canadensis</i> <i>A. cordifolia</i>	Hess 1981 Mauk and Hender- son 1984
<i>Pinus contorta</i> / <i>Pachistima myrsinites</i> P.C.	Mountains of central Colorado	Warm dry to well- drained	Seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. contorta</i>	<i>P. myrsinites</i> <i>V. scoparium</i> <i>J. communis</i> <i>L. borealis</i> <i>L. leucanthus</i>	Steen and Dix 1974
<i>Pinus contorta</i> / <i>Purshia tridentata</i> H.T.	Mountains of western Montana	Cool-warm dry to well- drained	Seral to <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>P. contorta</i> <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i>	<i>P. tridentata</i> <i>A. uva-ursi</i> <i>C. rossii</i> <i>F. idahoensis</i>	Pfister et al. 1977
<i>Pinus contorta</i> / <i>Shepherdia canadensis</i> H.T. (CO); C.T. (WY, ID)	Mountains of Idaho, north- western Wyo- ming; central and northern Colo- rado	Cool-warm dry to well- drained	Seral to <i>P. contorta</i> (CO) or unknown ultimate climax (WY, ID)	Usually only <i>P. contorta</i> but may contain <i>P. engelmannii</i> <i>P. menziesii</i> <i>A. lasiocarpa</i>	<i>S. canadensis</i> <i>P. myrsinites</i> <i>J. communis</i> <i>A. cordifolia</i> <i>L. borealis</i> <i>A. uva-ursi</i>	Hess 1981 Hess and Wasser 1981 Hoffman and Alex- ander 1980 Steen and Dix 1974 Steele et al. 1983
<i>Pinus contorta</i> / <i>Vaccinium myrtillus</i> H.T.	Mountains of central Colorado	Cool dry	Seral to <i>P. contorta</i>	<i>P. contorta</i>	<i>V. myrtillus</i> <i>C. geyeri</i> <i>L. borealis</i> <i>P. myrsinites</i>	Hess 1981 Moir 1969
<i>Pinus contorta</i> / <i>Carex geyeri</i> H.T. (CO); C.T. (WY)	Mountains of southern Wyo- ming and north central Colorado	Cool dry	Seral to <i>P. contorta</i> (CO) or unknown ultimate climax (WY)	<i>P. contorta</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>Pinus albicaulis</i> <i>P. flexilis</i>	<i>C. geyeri</i> <i>S. oreophilus</i> <i>A. cordifolia</i> <i>Lupinus argenteus</i> <i>B. repens</i> <i>J. communis</i>	Hess 1981 Hess and Wasser 1981 Steen and Dix 1974 Wirsing and Alex- ander 1975
<i>Pinus contorta</i> / <i>Carex rossii</i> H.T. (UT); C.T. (WY)	Mountains of northern Utah and northwestern Wyoming	Warm dry	Seral to <i>P. contorta</i> (UT) or to unknown ultimate climax (WY)	<i>P. contorta</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. albicaulis</i>	<i>C. rossii</i> <i>L. argenteus</i> <i>P. nervosa</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Pinus contorta</i> / <i>Lupinus argenteus</i> P.C.	Mountains of central and southern Colo- rado	Warm dry to well- drained	Seral to unknown ultimate climax	<i>P. contorta</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>L. argenteus</i>	Steen and Dix 1974

Table A5.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. tremuloides</i>	Principal tree associates	Principal understory species	Authority
<i>Picea engelmannii</i> series						
<i>Picea engelmannii</i> / <i>Acer glabrum</i> H.T.	Chiricahua Moun- tains, Arizona; Sacramento Mountains, New Mexico	Warm moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>A. lasiocarpa</i>	<i>A. glabrum</i> <i>B. ciliatus</i> <i>V. canadensis</i> <i>S. stellata</i>	Alexander et al. 1984a Moir and Ludwig 1979
<i>Picea engelmannii</i> / <i>Ribes montigenum</i> H.T.	Mountains of southern Utah	Cool dry	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i>	<i>R. montigenum</i> <i>C. rossii</i> <i>A. coerulea</i> <i>L. argenteus</i>	Youngblood 1984
<i>Picea engelmannii</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of northern Utah	Cool well- drained	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i>	<i>V. caespitosum</i> <i>Potentilla</i> spp. <i>Carex</i> spp.	Mauk and Hender- son 1984
<i>Picea engelmannii</i> / <i>Vaccinium myrtillus</i> H.T. [<i>P. engelmannii</i> / <i>V. myrtillus</i> - <i>Polenonium pulcher-</i> <i>rimum</i> H.T.] [<i>P. engelmannii</i> / <i>Vaccinium scoparium</i> - <i>P. delicatum</i> H.T.]	Mountains of northern New Mexico and southern Colo- rado	Cool dry	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>A. aristata</i>	<i>P. pulcherrimum</i> (<i>P. delicatum</i>) <i>Senecio</i> spp. <i>Poa reflexa</i> <i>Deschampsia</i> <i>caespitosa</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea engelmannii</i> / <i>Elymus triticoides</i> H.T.	Capitan Moun- tains, New Mex- ico	Cool dry to well- drained	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>E. triticoides</i> <i>A. glabrum</i> <i>Jamesia americana</i>	Alexander et al. 1984a Moir and Ludwig 1979
<i>Picea engelmannii</i> / <i>Arnica cordifolia</i> H.T.	Mountains of northwestern Wyoming	Cool well- drained	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. flexilis</i> <i>P. albicaulis</i> <i>P. contorta</i>	<i>A. cordifolia</i> <i>C. rossii</i> <i>A. miser</i> <i>Frasera speciosa</i>	Steele et al. 1983
<i>Picea engelmannii</i> / <i>Geum rossii</i> H.T.	San Francisco Peaks, Arizona	Cool dry	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i>	<i>G. rossii</i> <i>Polemonium</i> <i>delicatum</i> <i>Festuca</i> <i>brachyphylla</i>	Moir and Ludwig 1979
<i>Picea engelmannii</i> / <i>Senecio cardamine</i> H.T.	Blue Mountains, Arizona	Cool moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>A. concolor</i> <i>A. lasiocarpa</i> <i>P. pungens</i>	<i>S. cardamine</i> <i>F. ovalis</i> <i>G. richardsonii</i> <i>V. canadensis</i>	Fitzhugh et al. 1984
<i>Picea engelmannii</i> / <i>Trifolium dasyphyllum</i> H.T.	High mountains of central Colo- rado	Cold moist	Seral to <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. flexilis</i>	<i>T. dasyphyllum</i> <i>Pyrola chlorantha</i> <i>Sedum lanceolatum</i> <i>Trisetum spicatum</i>	Hess 1981
<i>Picea engelmannii</i> / Moss spp. H.T.	Mountains of Arizona, New Mexico, and southern Colo- rado	Cool moist to well- drained	Seral to <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>Pinus aristata</i> <i>P. menziesii</i>	Moss spp. <i>L. arizonicus</i> <i>V. scoparium</i> <i>A. glabrum</i> <i>Rosa</i> spp.	Alexander et al. 1984c Fitzhugh et al. 1984 Moir and Ludwig 1979

Table A5.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. tremuloides</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> series						
<i>Abies lasiocarpa</i> / <i>Acer glabrum</i> H.T.	Mountains of northern and central Utah; mountains of north-central and northwestern New Mexico	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>A. concolor</i> <i>P. pungens</i> <i>P. contorta</i> <i>P. flexilis</i>	<i>A. glabrum</i> <i>Thalictrum</i> <i>occidentale</i> <i>T. fendleri</i> <i>O. chilensis</i> <i>A. cordifolia</i>	Alexander et al. 1984c Mauk and Hender- son 1984 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Berberis repens</i> H.T.	Mountains of Utah, north- western Wyo- ming, and south- eastern Idaho	Warm to cool well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. pungens</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. flexilis</i> <i>A. concolor</i> <i>A. contorta</i>	<i>B. repens</i> <i>R. montigenum</i> <i>C. geyeri</i> <i>P. myrsinites</i> <i>S. oreophilus</i>	Mauk and Hender- son 1984 Steele et al. 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Juniperus communis</i> H.T.	Mountains of northwestern Wyoming, Utah, northern Arizona, and New Mexico	Warm to cold dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>A. concolor</i> (AZ, NM) <i>P. pungens</i> <i>P. longaeva</i>	<i>J. communis</i> <i>P. secunda</i> <i>S. canadensis</i> <i>A. cordifolia</i> <i>S. oreophilus</i> <i>R. woodsii</i>	Mauk and Hender- son 1984 Moir and Ludwig 1979 Steele et al. 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Linnaea borealis</i> H.T. (ID,WY) <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>L. borealis</i> P.C. (CO)	Mountains of southern Idaho, northwestern Wyoming, and central Colorado	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. ponderosa</i> <i>L. occidentalis</i>	<i>L. borealis</i> <i>A. cordifolia</i> <i>V. scoparium</i> <i>C. rubescens</i>	Steele et al. 1983 Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Pachistima myrsinites</i> P.C. <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>P. myrsinites</i> P.C.	Mountains of north-central Colorado	Warm dry to well- drained	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>P. myrsinites</i> <i>C. geyeri</i> <i>Erigeron</i> spp.	Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of eastern Idaho, northwestern Wyoming, and northern and central Utah	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>A. concolor</i>	<i>P. malvaceus</i> <i>A. cordifolia</i> <i>A. alnifolia</i> <i>Sorbus scopulina</i>	Mauk and Hender- son 1984 Steele et al. 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Ribes montigenum</i> H.T.	Mountains of Utah	Cool dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>R. montigenum</i> <i>Arnica latifolia</i> <i>T. fendleri</i> <i>Antennaria</i> <i>microphylla</i> <i>Mertensia arizonica</i>	Mauk and Hender- son 1984 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Rubus parviflorus</i> H.T.	Mountains of New Mexico and southwestern Colorado	Warm moist	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. engelmannii</i>	<i>R. parviflorus</i> <i>V. myrtillus</i> <i>A. glabrum</i> <i>P. myrsinites</i>	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Shepherdia canadensis</i> P.C. <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>S. canadensis</i> P.C.	Mountains of central Colorado	Cool-warm dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>S. canadensis</i> <i>V. scoparium</i>	Steen and Dix 1974

Table A5.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. tremuloides</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Symphoricarpos albus</i> H.T.	Mountains of southeastern Idaho	Warm well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>S. albus</i> <i>A. alnifolia</i> <i>C. rubescens</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of northern and central Utah	Cool well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>V. caespitosum</i> <i>L. borealis</i> <i>C. rubescens</i> <i>V. scoparium</i> <i>A. cordifolia</i>	Mauk and Hender- son 1984 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Vaccinium globulare</i> H.T.	Mountains of northern Utah	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i>	<i>V. globulare</i> <i>P. myrsinites</i> <i>A. cordifolia</i>	Mauk and Hender- son 1984
<i>Abies lasiocarpa</i> / <i>Vaccinium mem- branaceum</i> H.T.	Mountains of central Utah	Warm dry to well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>V. membranaceum</i> <i>C. rossii</i> <i>P. myrsinites</i>	Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Vaccinium myrtillus</i> H.T. [<i>A. lasiocarpa</i> / <i>V. myrtillus</i> - <i>Linnaea borealis</i> H.T.] [<i>A. lasiocarpa</i> / <i>V. myrtillus</i> - <i>Rubus parviflorus</i> H.T.] [<i>A. lasiocarpa</i> / <i>Vaccinium scoparium</i> - <i>L. borealis</i> H.T.]	Mogollon Plateau, Arizona; moun- tains of northern New Mexico and southern Colo- rado	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i> (AZ) <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. pungens</i> <i>P. flexilis</i> <i>P. aristata</i>	<i>V. myrtillus</i> <i>Disporum</i> <i>trachycarpum</i> <i>C. canadensis</i> <i>Polemonium flavum</i> <i>V. scoparium</i> <i>L. borealis</i> <i>R. parviflorus</i> <i>E. eximius</i> (<i>E. superbus</i>)	Alexander et al. 1984c DeVelice et al. 1984 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Vaccinium scoparium</i> H.T. <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>V. scoparium</i> H.T. [<i>P. engelmannii</i> / <i>V. scoparium</i> H.T.]	Mountains of Wyoming and Utah, south to New Mexico and Arizona	Cool dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>V. scoparium</i> <i>V. myrtillus</i> <i>A. cordifolia</i> <i>C. geyeri</i> <i>E. superbus</i> (<i>E. eximius</i>) <i>P. delicatum</i> <i>L. borealis</i> <i>P. myrsinites</i>	Hess 1981 Hoffman and Alex- ander 1980, 1983 Moir and Ludwig 1979 Pfister 1972 Steen and Dix 1974 Wirsing and Alex- ander 1975
<i>Abies lasiocarpa</i> / <i>Calamagrostis canadensis</i> H.T. [<i>Picea engelmannii</i> / <i>C. canadensis</i> H.T.]	Mountains of central and southern Idaho, western Wyo- ming, northern Utah, and north central Colorado	Cool wet	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. pungens</i>	<i>C. canadensis</i> <i>Senecio triangularis</i> <i>Galium triflorum</i>	Hess 1981 Mauk and Hender- son 1984 Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Calamagrostis rubescens</i> H.T.	Mountains of southern Idaho and northern Utah	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. engelmannii</i>	<i>C. rubescens</i> <i>O. chilensis</i> <i>C. geyeri</i> <i>A. cordifolia</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Carex geyeri</i> H.T., <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>C. geyeri</i> P.C. [<i>P. engelmannii</i> / <i>C. geyeri</i> H.T.]	Mountains of southern Utah, central and southern Wyo- ming, and north- central Colorado	Cool dry to warm dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. albicaulis</i>	<i>C. geyeri</i> <i>A. cordifolia</i> <i>S. oreophilus</i> <i>L. argenteus</i> <i>B. repens</i> <i>Lathyrus lanszwertii</i>	Hess 1981 Hoffman and Alex- ander 1980, 1983 Steen and Dix 1974 Wirsing and Alex- ander 1975 Youngblood 1984

Table A5.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. tremuloides</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Carex rossii</i> H.T.	Mountains of southern Idaho, Utah, and western Wyoming	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. engelmannii</i> (UT) <i>P. menziesii</i> (UT)	<i>C. rossii</i> <i>A. cordifolia</i> <i>A. miser</i> <i>R. woodsii</i>	Steele et al. 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Aconitum columbianum</i> H.T.	Mountains of central and southern Utah	Cool moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>A. concolor</i>	<i>A. columbianum</i> <i>Actaea rubra</i> <i>A. cordifolia</i> <i>B. ciliatus</i>	Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Actaea rubra</i> H.T.	Mountains of northern Utah	Warm moist	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. pungens</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>A. rubra</i> <i>O. chilensis</i> <i>Lonicera utahensis</i> <i>Vaccinium globulare</i>	Mauk and Hender- son 1984
<i>Abies lasiocarpa</i> / <i>Arnica cordifolia</i> H.T.	Mountains of northwestern Wyoming	Cool well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. albicaulis</i> <i>P. engelmannii</i>	<i>A. cordifolia</i> <i>P. secunda</i> <i>A. miser</i> <i>F. virginiana</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Arnica latifolia</i> H.T.	Mountains of southern Idaho and northern Utah	Cool dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>A. latifolia</i> <i>Aster engelmannii</i> <i>P. racemosa</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> - <i>Picea engelmannii</i> / <i>Cardamine cordifolia</i> P.C. [<i>A. lasiocarpa</i> / <i>Mertensia ciliata</i> H.T.]	Mountains of central and southern Colo- rado	Cool wet	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>C. cordifolia</i> <i>M. ciliata</i> <i>Mitella pentandra</i> <i>Carex bella</i>	DeVelice et al. 1984 Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Erigeron superbus</i> (<i>E. eximius</i>) H.T.	Mountains of southwestern Colorado, north- ern New Mexico, and Arizona	Cool dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. ponderosa</i> <i>A. concolor</i> <i>P. menziesii</i> <i>P. strobiformis</i>	<i>E. superbus</i> (<i>E. eximius</i>) <i>G. richardsonii</i> <i>L. arizonicus</i> <i>L. involucrata</i> <i>A. cordifolia</i>	Alexander et al. 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Lathyrus arizonicus</i> H.T.	San Francisco Peaks, Arizona	Cool dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i>	<i>L. arizonicus</i> <i>G. richardsonii</i> <i>S. stellata</i>	Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Osmorhiza chilensis</i> H.T.	Mountains of southern Idaho and northern Utah	Warm moist to well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>O. chilensis</i> <i>C. rossii</i> <i>B. repens</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Pedicularis racemosa</i> H.T.	Mountains of northern Utah	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>P. racemosa</i> <i>A. cordifolia</i> <i>S. oreophilus</i>	Mauk and Hender- son 1984
<i>Abies lasiocarpa</i> / <i>Polemonium delicatum</i> P.C., <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>P. delicatum</i> P.C.	High mountains of central and southern Colo- rado	Cool dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. contorta</i>	<i>P. delicatum</i> <i>Osmorhiza obtusa</i> <i>Vaccinium</i> spp.	Steen and Dix 1974

Table A5.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. tremuloides</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Senecio sanguisorboides</i> H.T.	Sacramento Mountains, New Mexico	Cool dry to well- drained	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i>	<i>S. sanguisorboides</i> <i>R. montigenum</i> <i>Ribes wolfii</i>	Alexander et al. 1984a Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Thalictrum occidentale</i> H.T.	Mountains of southeastern Idaho and north- western Wyoming	Warm well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>T. occidentale</i> <i>O. chilensis</i> <i>A. cordifolia</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / Moss spp. H.T. <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / Moss spp. P.C.	Mountains of northern New Mexico, central and southern Colorado	Cool dry to well- drained	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. aristata</i> <i>P. contorta</i> (CO) <i>P. menziesii</i>	Moss spp. <i>V. caespitosum</i> <i>Rosa</i> spp.	DeVelice et al. 1984 Steen and Dix 1974
<i>Pinus aristata</i> series						
<i>Pinus aristata</i> / <i>Festuca arizonica</i> H.T.	Sangre de Cristo Mountains, New Mexico	Warm dry	Seral to <i>P. aristata</i> <i>P. menziesii</i>	<i>P. aristata</i> <i>P. menziesii</i>	<i>F. arizonica</i> <i>K. cristata</i> <i>M. montana</i> <i>P. fendleriana</i>	DeVelice et al. 1984
Riparian series						
<i>Alnus tenuifolia</i> / <i>Equisetum arvense</i> H.T.	Streambanks, montane zone, north-central Colorado	Warm moist to wet	Seral to <i>A. tenuifolia</i>	<i>A. tenuifolia</i> <i>Betula</i> <i>occidentalis</i> <i>P. pungens</i>	<i>Salix</i> spp. <i>R. woodsii</i> <i>E. arvense</i> <i>A. glabrum</i>	Hess 1981
<i>Populus angustifolia</i> / <i>Salix exigua</i> H.T.	Streambanks, montane zone, north-central Colorado	Warm moist to wet	Seral to <i>P. angustifolia</i>	<i>P. angustifolia</i> <i>J. scopulorum</i> <i>P. pungens</i>	<i>Salix</i> spp. <i>A. glabrum</i>	Hess 1981

Table A6.—Habitat types, community types, and plant communities in which *Pinus contorta* is a climax, co-climax, minor climax, or seral.

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. contorta</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus contorta</i> series and other <i>P. contorta</i> dominated vegetation						
<i>Pinus contorta</i> / <i>Arctostaphylos uva-ursi</i> H.T. (UT,WY); P.C. (CO)	Uinta Mountains, Utah; Bighorn Mountains, north-central Wyoming; mountains of north-central Colorado	Warm dry to well-drained	Climax or seral to unknown ultimate climax. Probably <i>Abies lasiocarpa</i> <i>Picea engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>Populus tremuloides</i>	<i>A. uva-ursi</i> <i>Juniperus communis</i> <i>Spiraea betulifolia</i> <i>Carex rossii</i> <i>Berberis repens</i> <i>Sitanion hystrix</i>	Hoffmann and Alexander 1976 Mauk and Hender-son 1984 Steen and Dix 1974
<i>Pinus contorta</i> / <i>Berberis repens</i> C.T.	Uinta Mountains, Utah	Cool dry to well-drained	Seral to unknown ultimate climax	<i>P. tremuloides</i>	<i>B. repens</i> <i>Carex geyeri</i> <i>Pachistima myrsinites</i> <i>J. communis</i>	Mauk and Hender-son 1984
<i>Pinus contorta</i> / <i>Juniperus communis</i> H.T. (CO); C.T. (ID,WY,UT)	Mountains of eastern Idaho, northwestern Wyoming, north-ern Utah, and Colorado	Warm dry	Climax (CO) seral to unknown ultimate climax (ID,WY)	<i>Pseudotsuga menziesii</i> <i>P. tremuloides</i> <i>Pinus albicaulis</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>Shepherdia canadensis</i> <i>Arnica cordifolia</i>	Hess 1981 Komarkova 1984 Mauk and Hender-son 1984 Steele et al. 1983
<i>Pinus contorta</i> / <i>Linnaea borealis</i> C.T. (MT,WY); P.A. (CO)	Mountains of Montana east of Continental Divide, north-western Wyo-ming, and central Colorado	Cool moist to well-drained	Seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. engelmannii</i> (CO)	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i>	<i>L. borealis</i> <i>Vaccinium scoparium</i> <i>Vaccinium globulare</i> <i>A. cordifolia</i> <i>Calamagrostis rubescens</i>	Pfister et al. 1977 Steele et al. 1983 Steen and Dix 1974
<i>Pinus contorta</i> / <i>Pachistima myrsinites</i> P.C.	Mountains of north-central Colorado	Warm dry to well-drained	Seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>P. myrsinites</i> <i>V. scoparium</i> <i>J. communis</i> <i>L. borealis</i> <i>Lathyrus leucanthus</i>	Steen and Dix 1974
<i>Pinus contorta</i> / <i>Purshia tridentata</i> H.T.	Mountains of western Montana	Cool-warm dry to well-drained	Climax or seral to <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>P. tridentata</i> <i>A. uva-ursi</i> <i>C. rossii</i> <i>Festuca idahoensis</i> <i>Epilobium angusti-folium</i>	Pfister et al. 1977
<i>Pinus contorta</i> / <i>Shepherdia canadensis</i> H.T. (CO); C.T. (ID,WY)	Mountains of southwest Idaho, northwest Wyo-ming, central and northern Colo-rado	Cool-warm dry to well-drained	Climax (CO) or seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	Usually in pure stands but may contain <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>S. canadensis</i> <i>P. myrsinites</i> <i>J. communis</i> <i>A. cordifolia</i> <i>L. borealis</i> <i>A. uva-ursi</i>	Hess 1981 Hess and Wasser 1982 Hoffman and Alex-ander 1980 Steen and Dix 1974 Steele et al. 1983
<i>Pinus contorta</i> / <i>Spiraea betulifolia</i> C.T.	Mountains of eastern Idaho and northwestern Wyoming	Warm dry	Seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i>	<i>S. betulifolia</i> <i>C. rubescens</i> <i>C. geyeri</i>	Steele et al. 1983

Table A6.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. contorta</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus contorta</i> / <i>Vaccinium caespitosum</i> C.T.	Mountains of south-central Montana, Idaho, and northern Utah	Cool well- drained	Seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i>	<i>V. caespitosum</i> <i>V. scoparium</i> <i>Festuca ovina</i> <i>L. borealis</i>	Cooper et al. 1983 Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981
<i>Pinus contorta</i> / <i>Vaccinium globulare</i> C.T.	Mountains of south-central Idaho, northwestern Wyoming, and northern Utah	Cool well- drained	Seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i>	<i>V. globulare</i> <i>Lonicera utahensis</i> <i>V. scoparium</i> <i>C. rubescens</i>	Steele et al. 1983
<i>Pinus contorta</i> / <i>Vaccinium myrtillos</i> H.T.	Mountains of north-central Colorado	Cool dry	Climax	<i>P. tremuloides</i>	<i>V. myrtillos</i> <i>C. geyeri</i> <i>L. borealis</i> <i>P. myrsinites</i>	Moir 1969
<i>Pinus contorta</i> / <i>Vaccinium scoparium</i> H.T. (CO); C.T. (ID,UT,WY)	Mountains of Montana, Idaho, and northern Wyoming; Uinta Mountains, Utah; mountains of southern Wyo- ming, western and central Colo- rado	Cool dry	Climax (CO) seral to unknown ultimate climax (ID,WY,UT)	Usually pure stands but may contain <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. albicaulis</i> <i>Pinus flexilis</i> <i>Abies grandis</i> <i>Larix occidentalis</i> <i>Tsuga hetero- phylla</i>	<i>V. scoparium</i> <i>A. cordifolia</i> <i>J. communis</i> <i>L. borealis</i> <i>C. rubescens</i> <i>Lupinus argenteus</i> <i>B. repens</i> <i>C. geyeri</i>	Cooper et al. 1983 Hess 1981 Hoffman and Alex- ander 1980 Komarkova 1984 Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981, 1983 Steen and Dix 1974 Wirsing and Alex- ander 1975
<i>Pinus contorta</i> / <i>Xerophyllum tenax</i> C.T.	Mountains of northern Idaho	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i>	<i>X. tenax</i> <i>Vaccinium</i> spp.	Cooper et al. 1983
<i>Pinus contorta</i> / <i>Calamagrostis canadensis</i> C.T.	Uinta Mountains, Utah	Cool moist	Seral to unknown ultimate climax	<i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>C. canadensis</i> <i>A. cordifolia</i> <i>J. communis</i> <i>Poa nervosa</i>	Mauk and Hender- son 1984
<i>Pinus contorta</i> / <i>Calamagrostis rubescens</i> C.T.	Mountains of Montana, Idaho, northeastern Utah, and north- western Wyoming	Warm dry	Seral to unknown ultimate climax	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>C. rubescens</i> <i>V. scoparium</i> <i>C. geyeri</i> <i>A. cordifolia</i> <i>A. uva-ursi</i>	Pfister 1977 Steele et al. 1983
<i>Pinus contorta</i> / <i>Festuca idahoensis</i> H.T.	Mountains of central Idaho	Warm dry to well- drained	Climax	<i>P. albicaulis</i> <i>P. menziesii</i>	<i>F. idahoensis</i> <i>C. rossii</i> <i>Penstemon</i> spp. <i>Artemisia</i> spp.	Steele et al. 1981
<i>Pinus contorta</i> / <i>Carex geyeri</i> H.T. (CO); C.T. (ID,WY)	Mountains of central Idaho, northwestern Wyoming, south- ern Wyoming, and Colorado	Cool dry	Climax (CO) seral to unknown ultimate climax (ID,WY)	Pure stands or occasionally with <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. albicaulis</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>C. geyeri</i> <i>Symphoricarpos</i> <i>oreophilus</i> <i>A. cordifolia</i> <i>L. argenteus</i> <i>B. repens</i> <i>J. communis</i>	Hess 1981 Hess and Wasser 1982 Komarkova 1984 Steele et al. 1981, 1983 Steen and Dix 1974 Wirsing and Alex- ander 1975

Table A6.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. contorta</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus contorta</i> / <i>Carex rossii</i> H.T. (UT); C.T. (WY)	Mountains of northern Utah and northwestern Wyoming	Warm dry	Climax (UT) seral to unknown ultimate climax (WY)	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>C. rossii</i> <i>L. argenteus</i> <i>P. nervosa</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Pinus contorta</i> / <i>Arnica cordifolia</i> C.T.	Mountains of eastern Idaho and northwestern Wyoming	Cool dry	Seral to unknown ultimate climax	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. albicaulis</i> <i>P. flexilis</i>	<i>A. cordifolia</i> <i>Antennaria racemosa</i> <i>Astragalus miser</i> <i>Pyrola secunda</i>	Steele et al. 1983
<i>Pinus contorta</i> / <i>Geranium fremontii</i> H.T.	Front Range, north-central Colorado	Warm dry	Climax	Usually in pure stands. Occasionally <i>P. menziesii</i>	<i>G. fremontii</i> <i>A. uva-ursi</i> <i>J. communis</i>	Moir 1969
<i>Pinus contorta</i> / <i>Lupinus argenteus</i> P.C.	Mountains of central and southern Colo- rado	Warm dry to well- drained	Seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>L. argenteus</i>	Steen and Dix 1974
<i>Pinus contorta</i> / Lichen spp. P.C.	Mountains of central Colorado	Hot dry	Seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i>	Lichen spp.	Steen and Dix 1974
<i>Abies lasiocarpa</i> series						
<i>Abies lasiocarpa</i> / <i>Acer glabrum</i> H.T.	Mountains of central and southern Idaho, northern Utah, and northwestern Wyoming	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>A. glabrum</i> <i>Thalictrum</i> <i>occidentale</i> <i>Thalictrum fendleri</i> <i>Osmorhiza chilensis</i>	Mauk and Hender- son 1984 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Alnus sinuata</i> H.T.	Mountains of Montana, north- ern and central Idaho	Cool moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>A. sinuata</i> <i>V. scoparium</i> <i>X. tenax</i> <i>V. globulare</i>	Pfister et al. 1977 Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Berberis repens</i> H.T.	Mountains of northern Utah, northwestern Wyoming, and southeastern Idaho	Warm to cool well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>Picea pungens</i> <i>P. menziesii</i> <i>P. flexilis</i> <i>Abies concolor</i> <i>P. tremuloides</i>	<i>B. repens</i> <i>Ribes montigenum</i> <i>C. geyeri</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984 Pfister 1972 Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Clematis pseudoalpina</i> H.T.	Mountains of Montana east of Continental Divide	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. flexilis</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>C. pseudoalpina</i> <i>Clematis tenuiloba</i>	Pfister et al. 1977
<i>Abies lasiocarpa</i> / <i>Juniperus communis</i> H.T.	Mountains of central Idaho, northwestern Wyoming, and northern Utah	Warm to cold dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>J. communis</i> <i>P. secunda</i> <i>S. canadensis</i> <i>V. globulare</i>	Mauk and Hender- son 1984 Steele et al. 1981, 1983

Table A6.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. contorta</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Linnaea borealis</i> H.T. (MT,ID,WY) <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>L. borealis</i> P.C. (CO)	Mountains of Montana, central and southern Idaho, north- western Wyo- ming, central and southern Colo- rado	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i> (CO)	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>L. occidentalis</i> <i>Pinus ponderosa</i>	<i>L. borealis</i> <i>A. cordifolia</i> <i>V. scoparium</i> <i>C. rubescens</i>	Pfister et al. 1977 Steele et al. 1981, 1983 Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> H.T.	Mountains of southeastern Washington, eastern Oregon, Montana, Idaho, and northwestern Wyoming	Cool moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>Pinus monticola</i> <i>L. occidentalis</i> <i>P. albicaulis</i>	<i>M. ferruginea</i> <i>V. globulare</i> <i>Rhododendron albi- florum</i> <i>Ledum glandulosum</i> <i>Arnica latifolia</i> <i>Luzula hitchcockii</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Pachistima myrsinites</i> H.T. (CO,ID,WA), <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>P. myrsinites</i> P.C. (CO)	Mountains of eastern Washington, Idaho, central and southern Colo- rado	Warm dry to well- drained	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i> (CO)	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. monticola</i> <i>P. tremuloides</i> <i>L. occidentalis</i>	<i>P. myrsinites</i> <i>Clintonia uniflora</i> <i>Galium triflorum</i> <i>C. geyeri</i> <i>Erigeron</i> spp.	Daubenmire and Daubenmire 1968 Hess and Wasser 1981 Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Ribes montigenum</i> H.T.	Mountains of Idaho, northern Utah, and north- western Wyoming	Cool dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. albicaulis</i> <i>P. menziesii</i>	<i>R. montigenum</i> <i>A. latifolia</i> <i>T. fendleri</i> <i>Antennaria microphylla</i>	Mauk and Hender- son 1984 Pfister 1972 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Salix -seudolapponum</i> H.T. [<i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>S. glauca</i> H.T.]	High mountains of Colorado	Cold wet	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. flexilis</i>	<i>S. pseudolapponum</i> <i>V. myrtilus</i> <i>Polemonium pulcherrimum</i> <i>Acomastylis rossii</i>	Hess 1981 Hess and Wasser 1982 Komarkova 1984
<i>Abies lasiocarpa</i> / <i>Shepherdia canadensis</i> H.T. (WY) <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>S. canadensis</i> P.C. (CO)	Bighorn Moun- tains, Wyoming; mountains of central Colorado	Cool-warm dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. menziesii</i>	<i>S. canadensis</i> <i>V. scoparium</i>	Hoffman and Alex- ander 1976 Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Spiraea betulifolia</i> H.T.	Mountains of central and southern Idaho, and northwestern Wyoming	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>S. betulifolia</i> <i>C. geyeri</i> <i>C. rubescens</i> <i>P. myrsinites</i>	Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Symphoricarpos albus</i> H.T.	Mountains of southeastern Idaho and north- western Wyoming	Warm well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>S. albus</i> <i>A. alnifolia</i> <i>C. rubescens</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of south-central Montana, central Idaho, and north- ern Utah	Cool well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>V. caespitosum</i> <i>L. borealis</i> <i>C. rubescens</i> <i>V. scoparium</i>	Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Vaccinium globulare</i> H.T.	Mountains of south- central Montana, central and southern Idaho, northern Utah, and north- western Wyoming	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>V. globulare</i> <i>P. myrsinites</i> <i>L. utahensis</i> <i>A. cordifolia</i>	Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981, 1983

Table A6.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. contorta</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Vaccinium scoparium</i> H.T., <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>V. scoparium</i> P.C. [<i>P. engelmannii</i> / <i>V. scoparium</i> H.T.]	Mountains of Montana and Idaho, south to central Colorado	Cool dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>L. occidentalis</i> <i>P. tremuloides</i> <i>P. menziesii</i> <i>P. albicaulis</i> <i>Pinus aristata</i>	<i>V. scoparium</i> <i>C. rubescens</i> <i>V. myrtillus</i> <i>A. cordifolia</i> <i>C. geyeri</i> <i>Polemonium delicatum</i> (<i>P. pulcherrimum</i>) <i>L. borealis</i> <i>P. myrsinites</i> <i>Phyllodoce empetrifomis</i>	Daubenmire and Daubenmire 1968 Hess 1981 Hess and Wasser 1982 Hoffman and Alexander 1976, 1980, 1983 Mauk and Henderson 1984 Pfister et al. 1977 Steele et al. 1981, 1983 Steen and Dix 1974 Wirsing and Alexander 1975
<i>Abies lasiocarpa</i> - <i>Pinus albicaulis</i> / <i>Vaccinium scoparium</i> H.T.	Mountains of Montana, east of Continental Divide	Cool dry	Seral to <i>A. lasiocarpa</i> <i>P. albicaulis</i>	<i>A. lasiocarpa</i> <i>P. albicaulis</i> <i>P. engelmannii</i>	<i>V. scoparium</i> <i>C. geyeri</i> <i>X. tenax</i> <i>A. latifolia</i>	Pfister et al. 1977
<i>Abies lasiocarpa</i> / <i>Xerophyllum tenax</i> H.T.	Mountains of northern Idaho, eastern Washington and Oregon, southern Idaho, Montana, and northwestern Wyoming	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. albicaulis</i> <i>P. menziesii</i> <i>P. ponderosa</i>	<i>X. tenax</i> <i>Vaccinium membranaceum</i> <i>V. scoparium</i> <i>V. globulare</i> <i>L. hitchcockii</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Calamagrostis canadensis</i> H.T. [<i>Picea engelmannii</i> / <i>C. canadensis</i> H.T.]	Mountains of central Montana, Idaho, northwestern Wyoming, northern Utah, and central Colorado	Cool wet	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. pungens</i> <i>P. menziesii</i>	<i>C. canadensis</i> <i>V. caespitosum</i> <i>L. glandulosum</i> <i>Senecio triangularis</i> <i>G. triflorum</i>	Cooper et al. 1983 Hess 1981 Mauk and Henderson 1984 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Calamagrostis rubescens</i> H.T.	Mountains of Montana east of Continental Divide, central and southern Idaho, northern Utah, and northwestern Wyoming	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>C. rubescens</i> <i>O. chilensis</i> <i>T. occidentale</i> <i>C. geyeri</i> <i>A. cordifolia</i> <i>P. myrsinites</i>	Mauk and Henderson 1984 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Luzula hitchcockii</i> H.T.	Mountains of Montana west of Continental Divide, central and southern Idaho, and northwestern Wyoming	Cool well-drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. albicaulis</i>	<i>L. hitchcockii</i> <i>A. latifolia</i> <i>X. tenax</i> <i>A. cordifolia</i> <i>V. scoparium</i> <i>M. ferruginea</i>	Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Carex geyeri</i> H.T., <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>C. geyeri</i> P.C. [<i>P. engelmannii</i> / <i>C. geyeri</i> H.T.]	Mountains of Montana, central Idaho, Wyoming, and Colorado	Cool to warm dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>C. geyeri</i> <i>A. cordifolia</i> <i>S. oreophilus</i> <i>L. argenteus</i>	Hess 1981 Hess and Wasser 1982 Hoffman and Alexander 1980, 1983 Pfister et al. 1977 Steele et al. 1981, 1983 Steen and Dix 1974 Wirsing and Alexander 1975

Table A6.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. contorta</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Carex rossii</i> H.T.	Mountains of southern Idaho, northern Utah, and northwestern Wyoming	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>C. rossii</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Actaea rubra</i> H.T.	Mountains of central Idaho, northern Utah, and northwestern Wyoming	Warm moist	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. pungens</i> <i>V. globulare</i> <i>P. tremuloides</i>	<i>A. rubra</i> <i>O. chilensis</i> <i>L. utahensis</i> <i>V. globulare</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Arnica cordifolia</i> H.T.	Mountains of Montana east of Continental Divide, central Idaho, north- western and north-central Wyoming	Cool dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>A. cordifolia</i> <i>P. secunda</i> <i>A. miser</i> <i>Fragaria virginiana</i>	Hoffman and Alex- ander 1976 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Arnica latifolia</i> H.T.	Mountains of southern Idaho, northern Utah, and northwestern Wyoming	Cool dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>A. latifolia</i> <i>Aster engelmannii</i> <i>Pedicularis</i> <i>racemosa</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Caltha biflora</i> H.T.	Mountains of central Idaho	Cool wet	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>C. biflora</i> <i>Lonicera involucrata</i> <i>Pedicularis</i> <i>bracteosa</i> <i>Dodecatheon jeffreyi</i>	Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northwestern Montana, north- ern and central Idaho	Warm moist to dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>P. monticola</i> <i>P. ponderosa</i>	<i>C. uniflora</i> <i>M. ferruginea</i> <i>V. caespitosum</i> <i>Aralia nudicaulis</i> <i>X. tenax</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Coptis occidentalis</i> H.T.	Mountains of northern Idaho	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>A. grandis</i> <i>L. occidentalis</i>	<i>C. occidentalis</i> <i>X. tenax</i> <i>V. globulare</i> <i>M. ferruginea</i>	Cooper et al. 1983
<i>Abies lasiocarpa</i> / <i>Galium triflorum</i> H.T.	Mountains of Montana	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>G. triflorum</i> <i>A. rubra</i> <i>Streptopus amplexi- folius</i>	Pfister et al. 1977
<i>Abies lasiocarpa</i> - <i>Picea engelmannii</i> / <i>Lupinus argenteus</i> P.C.	Mountains of central and southern Colo- rado	Warm well- drained	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>L. argenteus</i> <i>V. scoparium</i>	Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Osmorhiza chilensis</i> H.T.	Mountains of southern Idaho and northern Utah	Warm moist to well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>O. chilensis</i> <i>C. rossii</i> <i>B. repens</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Pedicularis racemosa</i> H.T.	Mountains of southeastern Idaho, north- western Wyo- ming, and north- ern Utah	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>P. racemosa</i> <i>A. cordifolia</i> <i>S. oreophilus</i>	Mauk and Hender- son 1984 Steele et al. 1983

Table A6.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. contorta</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> - <i>Picea engelmannii</i> / <i>Polemonium delicatum</i> P.C.	Mountains of central and southern Colo- rado	Cool dry	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>P. delicatum</i> <i>Osmorhiza obtusa</i> <i>Erigeron</i> spp.	Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Streptopus amplexifolius</i> H.T.	Mountains of central Idaho	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>S. amplexifolius</i> <i>S. triangularis</i> <i>Ligusticum canbyi</i>	Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Thalictrum occidentale</i> H.T.	Mountains of southeastern Idaho and north- western Wyoming	Warm well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>T. occidentale</i> <i>A. cordifolia</i> <i>O. chilensis</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> - <i>Picea engelmannii</i> / Moss spp. P.C.	Mountains of central Colorado	Cool dry to well- drained	Seral to <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	Moss spp. <i>V. caespitosum</i> <i>Rosa</i> spp.	Steen and Dix 1974
<i>Picea engelmannii</i> series						
<i>Picea engelmannii</i> / <i>Juniperus communis</i> H.T.	Mountains of northwestern Wyoming	Warm dry	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. flexilis</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>J. communis</i> <i>A. cordifolia</i> <i>Frasera speciosa</i>	Steele et al. 1983
<i>Picea engelmannii</i> / <i>Linnaea borealis</i> H.T.	Mountains of Montana east of Continental Divide; Wind River Mountains, northwestern Wyoming	Cool well- drained	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i>	<i>L. borealis</i> <i>V. globulare</i> <i>S. albus</i> <i>J. communis</i>	Pfister et al. 1977 Steele et al. 1983
<i>Picea engelmannii</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of south-central Montana, eastern Idaho, and north- western Wyoming	Warm moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> (minor climax) <i>P. menziesii</i>	<i>P. malvaceus</i> <i>G. triflorum</i> <i>S. albus</i> <i>S. betulifolia</i>	Pfister et al. 1977 Steele et al. 1983
<i>Picea engelmannii</i> / <i>Ribes montigenum</i> H.T.	Wind River Moun- tains, north- western Wyo- ming; Aquarius Plateau, Utah	Cool dry to well- drained	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. albicaulis</i> <i>P. flexilis</i>	<i>R. montigenum</i> <i>Aquilegia caerulea</i> <i>Sibbaldia</i> <i>procumbens</i> <i>A. latifolia</i>	Pfister 1972 Steele et al. 1983
<i>Picea engelmannii</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of northwestern Montana and northern Utah	Cool well- drained	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>L. occidentalis</i> (MT) <i>P. ponderosa</i> (MT) <i>P. menziesii</i> (MT) <i>P. tremuloides</i> (UT)	<i>V. caespitosum</i> <i>L. borealis</i> <i>V. scoparium</i> <i>C. rubescens</i> <i>R. montigenum</i>	Mauk and Hender- son 1984 Pfister et al. 1977
<i>Picea engelmannii</i> / <i>Vaccinium scoparium</i> H.T.	Wind River and Bighorn Moun- tains, Wyoming; mountains of northern Utah	Cool dry	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. flexilis</i> <i>P. menziesii</i> <i>P. albicaulis</i> <i>A. lasiocarpa</i> (minor climax WR Mts.)	<i>V. scoparium</i> <i>A. cordifolia</i> <i>C. rossii</i> <i>Antennaria</i> spp. <i>F. virginiana</i>	Hoffman and Alex- ander 1976 Mauk and Hender- son 1984 Steele et al. 1983
<i>Picea engelmannii</i> / <i>Carex disperma</i> H.T.	Mountains of central and southern Idaho	Cool moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i>	<i>C. disperma</i> <i>P. secunda</i> <i>G. triflorum</i>	Steele et al. 1981

Table A6.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. contorta</i>	Principal tree associates	Principal understory species	Authority
<i>Picea engelmannii</i> / <i>Arnica cordifolia</i> H.T.	Mountains of northwestern Wyoming	Cool well- drained	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. albicaulis</i> <i>P. flexilis</i>	<i>A. cordifolia</i> <i>C. rossii</i> <i>A. miser</i> <i>F. speciosa</i>	Steele et al. 1983
<i>Picea engelmannii</i> / <i>Caltha leptosepala</i> H.T.	Uinta Mountains, Utah; mountains of northwestern Wyoming and southern Idaho	Cool moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. albicaulis</i>	<i>C. leptosepala</i> <i>V. scoparium</i> <i>Deschampsia</i> <i>caespitosa</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Picea engelmannii</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northwestern Montana	Warm moist to dry	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. ponderosa</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>C. uniflora</i> <i>V. caespitosum</i> <i>A. nudicaulis</i> <i>C. canadensis</i>	Pfister et al. 1977
<i>Picea engelmannii</i> / <i>Equisetum arvense</i> H.T.	Mountains of Montana, central Idaho, north- western Wyo- ming, northern Utah, central and southern Colo- rado	Warm to cool wet	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. pungens</i>	<i>E. arvense</i> <i>Equisetum</i> <i>seirpoides</i> <i>S. amplexifolius</i> <i>S. triangularis</i> <i>Luzula parviflora</i>	Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1983
<i>Picea engelmannii</i> / <i>Galium triflorum</i> H.T.	Mountains of south-central Montana, central Idaho, and north- western Wyoming	Cool moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. pungens</i> <i>P. ponderosa</i> <i>P. menziesii</i>	<i>G. triflorum</i> <i>A. rubra</i> <i>Smilacina stellata</i> <i>S. amplexifolius</i>	Pfister et al. 1977 Steele et al. 1981, 1983
<i>Picea engelmannii</i> / <i>Smilacina stellata</i> H.T.	Mountains of Montana, east of Continental Divide	Warm moist	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. ponderosa</i> <i>P. menziesii</i>	<i>S. stellata</i> <i>Smilacina racemosa</i> <i>T. occidentale</i>	Pfister et al. 1977
<i>Picea pungens</i> series						
<i>Picea pungens</i> / <i>Berberis repens</i> H.T.	Mountains of Utah	Cool dry	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. menziesii</i> (minor climax) <i>P. tremuloides</i>	<i>B. repens</i> <i>J. communis</i> <i>P. myrsinites</i> <i>A. caerulea</i> <i>P. secunda</i> <i>R. montigenum</i>	Mauk and Hender- son 1984 Pfister 1972
<i>Picea pungens</i> / <i>Agropyron spicatum</i> H.T.	Uinta Mountains, Utah	Warm dry	Seral to <i>P. pungens</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. flexilis</i> <i>Juniperus</i> <i>scopulorum</i> <i>P. ponderosa</i>	<i>A. spicatum</i> <i>B. repens</i> <i>J. communis</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984
<i>Populus tremuloides</i> series and other <i>P. tremuloides</i> dominated vegetation						
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Berberis repens</i> C.T. <i>P. tremuloides</i> / <i>B. repens</i> C.T.	Mountains of western Wyoming	Warm to cool. Well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>B. repens</i> <i>S. albus</i> <i>P. myrsinites</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Juniperus communis</i> C.T.	Mountains of western Wyoming	Warm dry	Seral to unknown ultimate climax	<i>P. flexilis</i> <i>P. tremuloides</i>	<i>J. communis</i> <i>B. repens</i> <i>S. canadensis</i> <i>Rosa woodsii</i>	Youngblood and Mueggler 1981

Table A6.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. contorta</i>	Principal tree associates	Principal understory species	Authority
<i>Populus tremuloides</i> / <i>Pachistima myrsinites</i> P.C. (CO); C.T. (ID)	Mountains of southeastern Idaho, central and southwestern Colorado	Warm dry	Seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>V. scoparium</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>P. myrsinites</i> <i>V. scoparium</i> <i>C. geyeri</i> <i>C. rubescens</i> <i>Geranium</i> <i>viscosissimum</i>	Mueggler and Campbell 1982 Steen and Dix 1974
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Prunus virginiana</i> C.T., <i>P. tremuloides</i> / <i>P. virginiana</i> C.T.	Mountains of western Wyoming	Warm dry	Seral to <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>P. virginiana</i> <i>B. repens</i> <i>S. oreophilus</i> <i>R. woodsii</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Shepherdia canadensis</i> C.T., <i>P. tremuloides</i> / <i>S. canadensis</i> C.T.	Mountains of western Wyoming	Cool-dry to well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>S. canadensis</i> <i>G. viscosissimum</i> <i>A. cordifolia</i> <i>R. woodsii</i> <i>T. fendleri</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Pseudotsuga menziesii</i> / <i>Symphoricarpos</i> <i>oreophilus</i> C.T., <i>P. tremuloides</i> / <i>S. oreophilus</i> C.T.	Mountains of southeastern Idaho	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>S. oreophilus</i> <i>C. rubescens</i> <i>Poa pratensis</i> <i>T. fendleri</i> <i>L. argenteus</i>	Mueggler and Campbell 1982
<i>Populus tremuloides</i> - <i>Pinus contorta</i> / <i>Calamagrostis rubescens</i> C.T., <i>P. tremuloides</i> / <i>C. rubescens</i> C.T.	Mountains of southeastern Idaho	Warm dry	Seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>C. rubescens</i> <i>S. oreophilus</i> <i>P. myrsinites</i> <i>T. fendleri</i> <i>L. argenteus</i>	Mueggler and Campbell 1982
<i>Populus tremuloides</i> - <i>Pseudotsuga menziesii</i> / <i>Calamagrostis rubescens</i> C.T., <i>P. tremuloides</i> / <i>C. rubescens</i> C.T.	Mountains of southwestern Idaho	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. tremuloides</i>	<i>C. rubescens</i> <i>S. oreophilus</i> <i>T. fendleri</i> <i>A. cordifolia</i> <i>L. argenteus</i>	Mueggler and Campbell 1982
<i>Populus tremuloides</i> / <i>Elymus glaucus</i> P.C.	Mountains of central and southwestern Colorado	Warm moist to well- drained	Seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>E. glaucus</i> <i>A. alnifolia</i> <i>Symphoricarpos</i> spp. <i>Ligusticum porteri</i>	Steen and Dix 1974
<i>Populus tremuloides</i> / <i>Festuca thurberi</i> P.C.	Mountains of central and southwestern Colorado	Warm dry	Seral to unknown ultimate climax. Probably <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. menziesii</i>	<i>F. thurberi</i> <i>B. repens</i> <i>S. oreophilus</i> <i>Fragaria ovalis</i>	Steen and Dix 1974
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Arnica cordifolia</i> C.T., <i>P. tremuloides</i> / <i>A. cordifolia</i> C.T.	Mountains of western Wyoming	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>A. cordifolia</i> <i>S. oreophilus</i> <i>C. rossii</i> <i>O. chilensis</i> <i>P. nervosa</i>	Youngblood and Mueggler 1981

Table A6.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. contorta</i>	Principal tree associates	Principal understory species	Authority
<i>Populus tremuloides</i> / <i>Equisetum arvense</i> C.T.	Mountains of western Wyoming	Cool wet	Seral to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>E. arvense</i> <i>E. glaucus</i> <i>T. fendleri</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Heracleum lanatum</i> C.T.	Mountains of western Wyoming	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>H. lanatum</i> <i>P. bracteosa</i> <i>T. fendleri</i> <i>E. glaucus</i>	Youngblood and Mueggler 1981
<i>Thuja plicata</i> series						
<i>Thuja plicata</i> / <i>Pachistima myrsinites</i> H.T.	Mountains of northern Idaho, eastern Washington, and Oregon	Warm dry to well- drained	Seral to <i>T. plicata</i>	<i>T. plicata</i> <i>P. monticola</i> <i>L. occidentalis</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>A. grandis</i>	<i>P. myrsinites</i> <i>A. glabrum</i> <i>G. triflorum</i>	Daubenmire and Daubenmire 1968
<i>Thuja plicata</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northern Idaho and northwestern Montana	Cool to warm moist bot- tomlands	Seral to <i>T. plicata</i>	<i>T. plicata</i> <i>A. lasiocarpa</i> <i>A. grandis</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>P. engelmannii</i>	<i>C. uniflora</i> <i>A. nudicaulis</i> <i>M. ferruginea</i> <i>X. tenax</i>	Cooper et al. 1983 Pfister et al. 1977
<i>Pinus ponderosa</i> series						
<i>Pinus ponderosa</i> / <i>Festuca idahoensis</i> H.T.	Uinta Mountains, Utah	Warm dry	Seral to <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>P. tremuloides</i> <i>J. scopulorum</i>	<i>F. idahoensis</i> <i>Arctostaphylos</i> <i>patula</i> <i>Artemisia tridentata</i>	Mauk and Hender- son 1984
<i>Pinus ponderosa</i> / <i>Carex geyeri</i> H.T.	Uinta Mountains, Utah	Warm dry	Seral to <i>P. ponderosa</i>	<i>P. ponderosa</i> <i>P. tremuloides</i>	<i>C. geyeri</i> <i>A. alnifolia</i> <i>B. repens</i> <i>P. nervosa</i>	Mauk and Hender- son 1984
<i>Abies grandis</i> series						
<i>Abies grandis</i> / <i>Linnaea borealis</i> H.T.	Mountains of northern Idaho and central Mon- tana	Cool moist to well- drained	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. monticola</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>P. ponderosa</i>	<i>L. borealis</i> <i>Adenocaulon bicolor</i> <i>Disporum hookeri</i> <i>A. cordifolia</i> <i>Bromus vulgaris</i> <i>X. tenax</i> <i>V. globulare</i>	Cooper et al. 1983 Pfister et al. 1977
<i>Abies grandis</i> / <i>Pachistima myrsinites</i> H.T.	Mountains of northern Idaho, eastern Washington, and eastern Oregon	Warm well- drained	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>P. engelmannii</i> <i>P. monticola</i>	<i>P. myrsinites</i> <i>G. triflorum</i> <i>S. stellata</i> <i>T. occidentale</i>	Daubenmire and Daubenmire 1968
<i>Abies grandis</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of northern Idaho	Warm dry	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. ponderosa</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>P. malvaceus</i> <i>A. glabrum</i> <i>Holodiscus discolor</i> <i>S. racemosa</i>	Cooper et al. 1983
<i>Abies grandis</i> / <i>Spiraea betulifolia</i> H.T.	Mountains of central Idaho	Warm dry	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>S. betulifolia</i> <i>C. rubescens</i> <i>A. cordifolia</i>	Steele et al. 1981

Table A6.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. contorta</i>	Principal tree associates	Principal understory species	Authority
<i>Abies grandis</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of central Idaho	Cool well- drained	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>L. occidentalis</i>	<i>V. caespitosum</i> <i>F. virginiana</i> <i>C. rubescens</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Vaccinium globulare</i> H.T.	Mountains of central Idaho	Cool well- drained	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i> <i>P. menziesii</i>	<i>V. globulare</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Xerophyllum tenax</i> H.T.	Mountains of northwestern Montana and northern Idaho	Warm dry	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>L. occidentalis</i> <i>P. ponderosa</i>	<i>X. tenax</i> <i>V. globulare</i> <i>C. rubescens</i> <i>P. myrsinites</i>	Cooper et al. 1983 Pfister et al. 1977
<i>Abies grandis</i> / <i>Calamagrostis rubescens</i> H.T.	Mountains of central Idaho	Warm dry	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. menziesii</i> <i>P. ponderosa</i>	<i>C. rubescens</i> <i>C. geyeri</i> <i>A. cordifolia</i> <i>O. chilensis</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Clintonia uniflora</i> H.T.	Mountains of western Montana, central and north- ern Idaho	Warm moist	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. engelmannii</i> <i>L. occidentalis</i>	<i>C. uniflora</i> <i>L. borealis</i> <i>A. bicolor</i> <i>P. malvaceus</i> <i>X. tenax</i> <i>A. glabrum</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Abies grandis</i> / <i>Coptis occidentalis</i> H.T.	Mountains of central and north- ern Idaho	Warm moist	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>L. occidentalis</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>C. occidentalis</i> <i>P. malvaceus</i> <i>V. globulare</i> <i>X. tenax</i> <i>S. albus</i> <i>H. discolor</i>	Cooper et al. 1983 Steele et al. 1981
<i>Pseudotsuga menziesii</i> series						
<i>Pseudotsuga menziesii</i> / <i>Acer glabrum</i> H.T.	Mountains of eastern Idaho, northern Utah, and northwestern Wyoming	Cool moist	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. tremuloides</i> <i>A. grandis</i> <i>P. flexilis</i>	<i>A. glabrum</i> <i>S. oreophilus</i> <i>A. alnifolia</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Pseudotsuga menziesii</i> / <i>Berberis repens</i> H.T.	Mountains of southeast Idaho, northern Utah, north-central and northwestern Wyoming	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. flexilis</i> <i>P. tremuloides</i> <i>P. ponderosa</i> <i>J. scopulorum</i>	<i>B. repens</i> <i>S. oreophilus</i> <i>C. geyeri</i> <i>J. communis</i> <i>A. cordifolia</i>	Hoffman and Alex- ander 1976 Mauk and Hender- son 1984 Steele et al. 1983
<i>Pseudotsuga menziesii</i> / <i>Juniperus communis</i> H.T.	Mountains of central and southwestern Montana, central Idaho, and north- western Wyoming	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. flexilis</i> <i>S. canadensis</i>	<i>J. communis</i> <i>S. oreophilus</i> <i>S. canadensis</i> <i>A. cordifolia</i> <i>Juniperus</i> <i>horizontalis</i> <i>A. miser</i>	Pfister et al. 1977 Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> / <i>Linnaea borealis</i> H.T.	Mountains of northwestern Montana and central Idaho	Warm moist to well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>L. occidentalis</i>	<i>L. borealis</i> <i>C. rubescens</i> <i>S. albus</i> <i>V. globulare</i>	Pfister et al. 1977 Steele et al. 1981

Table A6.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. contorta</i>	Principal tree associates	Principal understory species	Authority
<i>Pseudotsuga menziesii</i> / <i>Pachistima myrsinites</i> H.T.	Mountains of central Colorado	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. tremuloides</i> <i>P. engelmannii</i>	<i>P. myrsinites</i> <i>A. cordifolia</i> <i>B. repens</i> <i>V. myrtilillus</i> <i>Q. gambelii</i>	Hess and Wasser 1982
<i>Pseudotsuga menziesii</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of Montana; Uinta Mountains, Utah	Warm moist to well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>L. occidentalis</i> <i>P. ponderosa</i> <i>P. tremuloides</i> <i>J. scopulorum</i>	<i>P. malvaceus</i> <i>Prunus virginiana</i> <i>H. discolor</i> <i>S. albus</i>	Mauk and Hender- son 1984 Pfister et al. 1977
<i>Pseudotsuga menziesii</i> / <i>Physocarpus monogynus</i> H.T.	Bighorn Moun- tains, Wyoming	Warm well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. flexilis</i>	<i>P. monogynus</i> <i>B. repens</i> <i>S. oreophilus</i> <i>S. betulifolia</i>	Hoffman and Alex- ander 1976
<i>Pseudotsuga menziesii</i> / <i>Spiraea betulifolia</i> H.T.	Mountains of central and eastern Idaho, and northwestern Wyoming	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. flexilis</i>	<i>S. betulifolia</i> <i>C. rubescens</i> <i>P. myrsinites</i>	Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> / <i>Symphoricarpos albus</i> H.T.	Mountains of central and eastern Idaho, southeastern Montana, and northwestern Wyoming	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>S. albus</i> <i>S. betulifolia</i> <i>A. uva-ursi</i> <i>B. repens</i>	Pfister et al. 1977 Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> / <i>Symphoricarpos</i> <i>oreophilus</i> H.T.	Mountains of northern Utah and southern Idaho	Cool dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>S. oreophilus</i> <i>R. montigenum</i> <i>A. tridentata</i>	Mauk and Hender- son 1984
<i>Pseudotsuga menziesii</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of northwestern Montana, central and northern Idaho	Cool moist to well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>L. occidentalis</i>	<i>V. caespitosum</i> <i>A. uva-ursi</i> <i>C. rubescens</i> <i>C. geyeri</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Vaccinium globulare</i> H.T.	Mountains of north-central Montana, north- ern and eastern Idaho	Cool dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>L. occidentalis</i>	<i>V. globulare</i> <i>C. rubescens</i> <i>L. borealis</i> <i>S. betulifolia</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> / <i>Calamagrostis rubescens</i> H.T.	Mountains of eastern Washington and Oregon, Idaho, Montana, and northwestern Wyoming	Warm to cool dry to well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. ponderosa</i> <i>L. occidentalis</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>C. rubescens</i> <i>C. geyeri</i> <i>A. cordifolia</i> <i>A. uva-ursi</i> <i>P. myrsinites</i> <i>A. spicatum</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Pseudotsuga menziesii</i> / <i>Carex geyeri</i> H.T.	Mountains of central Idaho	Warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. tremuloides</i> <i>P. ponderosa</i>	<i>C. geyeri</i> <i>A. tridentata</i> <i>Lupinus</i> spp.	Steele et al. 1981
<i>Pseudotsuga menziesii</i> / <i>Arnica cordifolia</i> H.T.	Mountains of east-central Idaho and northwestern Wyoming	Cool to warm dry	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. flexilis</i>	<i>A. cordifolia</i> <i>A. miser</i> <i>S. oreophilus</i> <i>P. nervosa</i>	Steele et al. 1981, 1983

Table A6.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. contorta</i>	Principal tree associates	Principal understory species	Authority
<i>Pseudotsuga menziesii</i> / <i>Osmorhiza chilensis</i> H.T.	Mountains of southern Idaho and northern Utah	Warm well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. tremuloides</i> <i>A. grandis</i> <i>J. scopulorum</i>	<i>O. chilensis</i> <i>S. racemosa</i> <i>Viola nuttallii</i> <i>P. virginiana</i> <i>A. cordifolia</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Abies concolor</i> series						
<i>Abies concolor</i> / <i>Berberis repens</i> H.T.	Mountains of northern Utah	Warm dry	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>A. grandis</i>	<i>B. repens</i> <i>Osmorhiza</i> spp. <i>A. alnifolia</i> <i>C. geyeri</i>	Mauk and Hender- son 1984
<i>Tsuga heterophylla</i> series						
<i>Tsuga heterophylla</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northern Idaho and northwestern Montana	Warm moist	Seral to <i>T. heterophylla</i> <i>T. plicata</i>	<i>T. heterophylla</i> <i>T. plicata</i> <i>P. monticola</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>C. uniflora</i> <i>A. nudicaulis</i> <i>M. ferruginea</i> <i>X. tenax</i> <i>L. borealis</i>	Cooper et al. 1983 Pfister et al. 1977
<i>Tsuga mertensiana</i> series						
<i>Tsuga mertensiana</i> / <i>Menziesia ferruginea</i> H.T.	Mountains of northern Idaho, eastern Washington, and eastern Oregon	Cool moist	Seral to <i>T. mertensiana</i>	<i>T. mertensiana</i> <i>A. lasiocarpa</i> <i>L. occidentalis</i> <i>P. engelmannii</i>	<i>M. ferruginea</i> <i>X. tenax</i> <i>R. albiflorum</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977
<i>Tsuga mertensiana</i> / <i>Xerophyllum tenax</i> H.T.	Mountains of northern Idaho and northwestern Montana	Warm dry	Seral to <i>T. mertensiana</i>	<i>T. mertensiana</i> <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. albicaulis</i> <i>P. monticola</i> <i>L. occidentalis</i>	<i>X. tenax</i> <i>V. membranaceum</i> <i>V. globulare</i>	Daubenmire and Daubenmire 1968 Pfister et al. 1977
<i>Tsuga mertensiana</i> / <i>Luzula hitchcockii</i> H.T.	Mountains of Montana, west of Continental Divide	Cool well- drained	Seral to <i>T. mertensiana</i> <i>A. lasiocarpa</i>	<i>T. mertensiana</i> <i>A. lasiocarpa</i> <i>P. albicaulis</i> <i>P. engelmannii</i>	<i>L. hitchcockii</i> <i>V. scoparium</i> <i>X. tenax</i> <i>A. latifolia</i>	Pfister et al. 1977
<i>Tsuga mertensiana</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northern Idaho	Warm moist	Seral to <i>T. mertensiana</i>	<i>T. mertensiana</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>A. lasiocarpa</i> <i>A. grandis</i>	<i>C. uniflora</i> <i>M. ferruginea</i> <i>X. tenax</i>	Cooper et al. 1983
<i>Pinus flexilis</i> series						
<i>Pinus flexilis</i> / <i>Juniperus communis</i> H.T.	Mountains of northwestern Wyoming	Warm dry	Minor climax to <i>P. flexilis</i>	<i>P. flexilis</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. tremuloides</i>	<i>J. communis</i> <i>S. canadensis</i> <i>A. cordifolia</i>	Steele et al. 1983
<i>Pinus albicaulis</i> series						
<i>Pinus albicaulis</i> / <i>Juniperus communis</i> H.T.	Mountains of southeastern Idaho and north- western Wyoming	Cool dry	Co-climax with <i>P. albicaulis</i>	<i>P. albicaulis</i> <i>P. flexilis</i>	<i>J. communis</i> <i>S. canadensis</i> <i>A. miser</i>	Steele et al. 1983

Table A6.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. contorta</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus albicaulis</i> / <i>Vaccinium scoparium</i> H.T.	Mountains of northwestern Wyoming	Cool dry	Co-climax with <i>P. albicaulis</i>	<i>P. albicaulis</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>V. scoparium</i> <i>C. rossii</i> <i>A. cordifolia</i>	Steele et al. 1983
<i>Pinus albicaulis</i> / <i>Carex geyeri</i> H.T.	Mountains of northwestern Wyoming	Cool dry	Co-climax with <i>P. albicaulis</i>	<i>P. albicaulis</i>	<i>C. geyeri</i> <i>F. idahoensis</i> <i>Trisetum spicatum</i>	Steele et al. 1983
<i>Pinus albicaulis</i> / <i>Carex rossii</i> H.T.	Mountains of northwestern Wyoming	Cool dry	Seral to <i>P. albicaulis</i>	<i>P. albicaulis</i> <i>A. lasiocarpa</i> <i>P. engelmannii</i>	<i>C. rossii</i>	Steele et al. 1983

Table A7.—Habitat types, community types, and plant communities in which *Picea engelmannii* is climax, co-climax, minor climax, or seral.

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Picea engelmannii</i> series						
<i>Picea engelmannii</i> / <i>Acer glabrum</i> H.T.	Chiricahua Mountains, Arizona; Sacramento Mountains, New Mexico	Warm moist	Climax	<i>Abies lasiocarpa</i> <i>Pseudotsuga menziesii</i> <i>Populus tremuloides</i>	<i>A. glabrum</i> <i>Bromus ciliatus</i> <i>Viola canadensis</i> <i>Smilacina stellata</i>	Alexander et al. 1984a Moir and Ludwig 1979
<i>Picea engelmannii</i> / <i>Juniperus communis</i> H.T.	Mountains of northwestern Wyoming	Warm dry	Climax	<i>Pinus flexilis</i> <i>P. menziesii</i> <i>Pinus albicaulis</i> <i>Pinus contorta</i>	<i>J. communis</i> <i>Arnica cordifolia</i> <i>Frasera speciosa</i>	Steele et al. 1983
<i>Picea engelmannii</i> / <i>Linnaea borealis</i> H.T.	Mountains of Montana east of Continental Divide; Wind River Mountains, northwestern Wyoming	Cool well-drained	Climax	<i>P. contorta</i> <i>P. menziesii</i>	<i>L. borealis</i> <i>Vaccinium globulare</i> <i>Symphoricarpos albus</i> <i>J. communis</i>	Pfister et al. 1977 Steele et al. 1983
<i>Picea engelmannii</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of south-central Montana, eastern Idaho, and northwestern Wyoming	Warm moist	Climax	<i>A. lasiocarpa</i> (minor climax) <i>P. contorta</i> <i>P. menziesii</i>	<i>P. malvaceus</i> <i>Galium triflorum</i> <i>S. albus</i> <i>Spiraea betulifolia</i>	Pfister et al. 1977 Steele et al. 1983
<i>Picea engelmannii</i> / <i>Ribes montigenum</i> H.T.	Wind River Mountains, northwestern Wyoming; mountains of southern Utah	Cool dry to well-drained	Climax	<i>P. contorta</i> <i>P. albicaulis</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>R. montigenum</i> <i>Aquilegia caerulea</i> <i>Sibbaldia procumbens</i> <i>Arnica latifolia</i> <i>Astragalus miser</i>	Pfister 1972 Steele et al. 1983 Youngblood 1984
<i>Picea engelmannii</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of northwestern Montana and northern Utah	Cool well-drained	Climax	<i>P. menziesii</i> <i>Larix occidentalis</i> <i>Pinus ponderosa</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>V. caespitosum</i> <i>L. borealis</i> <i>Vaccinium scoparium</i> <i>Calamagrostis rubescens</i> <i>R. montigenum</i>	Mauk and Henderson 1984 Pfister et al. 1977
<i>Picea engelmannii</i> / <i>Vaccinium myrtillus</i> H.T. [<i>P. engelmannii</i> / <i>V. myrtillus</i> - <i>Polemonium pulcherrimum</i> H.T.] [<i>P. engelmannii</i> / <i>Vaccinium scoparium</i> - <i>P. delicatum</i> H.T.]	Sangre de Cristo Mountains, southern Colorado and northern New Mexico	Cool dry	Climax	<i>A. lasiocarpa</i> (minor climax) <i>Pinus aristata</i> <i>P. tremuloides</i>	<i>P. delicatum</i> (<i>P. pulcherrimum</i>) <i>Senecio</i> spp. <i>Deschampsia caespitosa</i> <i>Poa reflexa</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea engelmannii</i> / <i>Vaccinium scoparium</i> H.T.	Wind River and Bighorn Mountains, Wyoming; mountains of northern Utah	Cool dry	Climax	<i>A. lasiocarpa</i> (minor climax WR Mts) <i>P. flexilis</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>V. scoparium</i> <i>A. cordifolia</i> <i>Carex rossii</i> <i>Antennaria</i> spp. <i>Fragaria virginiana</i>	Hoffman and Alexander 1976 Mauk and Henderson 1984 Steele et al. 1983
<i>Picea engelmannii</i> / <i>Bromus ciliatus</i> H.T.	Mogollon and Black Mountains, New Mexico	Cool dry	Climax	<i>P. menziesii</i>	<i>B. ciliatus</i> <i>S. stellata</i> <i>Lathyrus arizonicus</i> <i>V. canadensis</i>	Fitzhugh et al. 1984

Table A7.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Picea engelmannii</i> / <i>Elymus triticoides</i> H.T.	Capitan Moun- tains, New Mex- ico	Cool dry to well- drained	Climax or co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>E. triticoides</i> <i>A. glabrum</i> <i>Jamesia americana</i>	Alexander et al. 1984a Moir and Ludwig 1979
<i>Picea engelmannii</i> / <i>Carex disperma</i> H.T.	Mountains of central and southern Idaho, and northwestern Wyoming	Cool moist	Climax	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>Picea pungens</i>	<i>C. disperma</i> <i>Pyrola secunda</i> <i>G. triflorum</i>	Steele et al. 1981, 1983
<i>Picea engelmannii</i> / <i>Carex foenea</i> H.T.	Pinaleno Moun- tains, Arizona	Cool dry	Climax	Generally in pure stands	<i>C. foenea</i>	Moir and Ludwig 1979
<i>Picea engelmannii</i> / <i>Arnica cordifolia</i> H.T.	Mountains of northwestern Wyoming	Cool well- drained	Climax	<i>P. menziesii</i> <i>P. flexilis</i> <i>P. albicaulis</i> <i>P. tremuloides</i> <i>P. contorta</i>	<i>A. cordifolia</i> <i>C. rossii</i> <i>A. miser</i> <i>F. speciosa</i>	Steele et al. 1983
<i>Picea engelmannii</i> / <i>Caltha leptosepala</i> H.T.	Uinta Mountains, Utah; mountains of northwestern Wyoming and Idaho	Cool moist	Climax	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. albicaulis</i>	<i>C. leptosepala</i> <i>V. scoparium</i> <i>D. caespitosa</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Picea engelmannii</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northwestern Montana	Warm moist to dry	Climax	<i>P. menziesii</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>L. occidentalis</i>	<i>C. uniflora</i> <i>V. caespitosum</i> <i>Aralia nudicaulis</i> <i>Cornus canadensis</i>	Pfister et al. 1977
<i>Picea engelmannii</i> / <i>Equisetum arvense</i> H.T.	Mountains of Montana, central Idaho, north- western Wyo- ming, and north- ern Utah	Warm to cool wet	Climax	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. pungens</i>	<i>E. arvense</i> <i>Equisetum</i> <i>scirpoides</i> <i>Streptopus amplexi- folius</i> <i>Senecio triangularis</i> <i>Luzula parviflora</i>	Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Picea engelmannii</i> / <i>Galium triflorum</i> H.T.	Mountains of south-central Montana, central Idaho, and north- western Wyoming	Cool moist	Climax	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. pungens</i> <i>P. ponderosa</i> <i>P. menziesii</i>	<i>G. triflorum</i> <i>Actaea rubra</i> <i>S. stellata</i> <i>S. amplexifolius</i>	Pfister et al. 1977 Steele et al. 1981, 1983
<i>Picea engelmannii</i> / <i>Geum rossii</i> H.T.	San Francisco Peaks, Arizona	Cool dry	Climax	<i>P. tremuloides</i>	<i>G. rossii</i> <i>P. delicatum</i> (<i>P. pulcherrimum</i>) <i>Festuca</i> <i>brachyphylla</i>	Moir and Ludwig 1979
<i>Picea engelmannii</i> / <i>Hypnum revolutum</i> H.T.	Mountains of central and southeastern Idaho, and north- western Wyoming	Cool dry	Climax	<i>P. flexilis</i> <i>P. albicaulis</i> <i>P. menziesii</i>	<i>H. revolutum</i> <i>Discranowiesia</i> <i>crispula</i>	Steele et al. 1981, 1983
<i>Picea engelmannii</i> / <i>Saxifraga bronchialis</i> H.T. (Scree Forest)	Mountains of northern New Mexico and southern Colo- rado	Warm dry	Climax	<i>A. lasiocarpa</i> (minor climax)	<i>S. bronchialis</i> <i>J. communis</i>	DeVelice et al. 1984

Table A7.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Picea engelmannii</i> / <i>Senecio cardamine</i> H.T.	Blue Mountains, Arizona	Cool moist	Climax	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>Pinus strobi-</i> <i>formis</i> <i>Abies concolor</i> <i>P. pungens</i> <i>P. tremuloides</i>	<i>S. cardamine</i> <i>Geranium</i> <i>richardsonii</i> <i>Fragaria ovalis</i> <i>V. canadensis</i>	Fitzhugh et al. 1984
<i>Picea engelmannii</i> / <i>Senecio streptanthifolius</i> H.T.	Mountains of central and southwestern Montana	Cool dry to well- drained	Climax	<i>P. menziesii</i> <i>P. flexilis</i> <i>P. albicaulis</i>	<i>S. streptanthifolius</i> <i>P. secunda</i> <i>A. cordifolia</i>	Pfister et al. 1977
<i>Picea engelmannii</i> / <i>Smilacina stellata</i> H.T.	Mountains of Montana east of Continental Divide	Warm moist	Climax	<i>P. menziesii</i> <i>P. contorta</i> <i>P. ponderosa</i>	<i>S. stellata</i> <i>Smilacina racemosa</i> <i>Thalictrum occiden-</i> <i>tale</i>	Pfister et al. 1977
<i>Picea engelmannii</i> / <i>Trifolium dasyphyllum</i> H.T.	Mountains of central Colorado	Cold moist	Climax or co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>T. dasyphyllum</i> <i>Pyrola chlorantha</i> <i>Sedum lanceolatum</i> <i>Trisetum spicatum</i>	Hess 1981
<i>Picea engelmannii</i> / Moss spp. H.T.	Mountains of New Mexico and Arizona	Cool moist to well- drained	Climax or co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. tremuloides</i> <i>P. aristata</i> <i>P. menziesii</i>	Moss spp. <i>Ribes</i> spp. <i>L. arizonicus</i> <i>Vaccinium</i> spp. <i>Rosa</i> spp.	Alexander et al. 1984c Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> series						
<i>Abies lasiocarpa</i> / <i>Acer glabrum</i> H.T.	Mountains of central and southern Idaho, northern and central Utah, and northwestern Wyoming; moun- tains of north- central and north- western New Mexico	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>P. pungens</i> <i>A. concolor</i> <i>P. flexilis</i>	<i>A. glabrum</i> <i>T. occidentale</i> <i>Thalictrum fendleri</i> <i>Osmorhiza chilensis</i> <i>A. cordifolia</i> <i>B. repens</i> <i>B. ciliatus</i>	Alexander et al. 1984c Mauk and Hender- son 1984 Steele et al. 1981, 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Alnus sinuata</i> H.T.	Mountains of central and southwestern Montana, and central Idaho	Cool moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>A. sinuata</i> <i>V. scoparium</i> <i>Xerophyllum tenax</i> <i>V. globulare</i>	Pfister et al. 1977 Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Berberis repens</i> H.T.	Mountains of Utah, north- western Wyo- ming; and south- eastern Idaho	Warm to cool well- drained	Minor climax to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. pungens</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. flexilis</i> <i>A. concolor</i> <i>P. tremuloides</i>	<i>B. repens</i> <i>R. montigenum</i> <i>Carex geyeri</i> <i>Pachistima</i> <i>myrsinites</i> <i>Symphoricarpos</i> <i>oreophilus</i> <i>J. communis</i>	Mauk and Hender- son 1984 Pfister 1972 Steele et al. 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Clematis pseudoalpina</i> H.T.	Mountains of Montana east of Continental Divide	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. flexilis</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>C. pseudoalpina</i> <i>Clematis tenuiloba</i>	Pfister et al. 1977

Table A7.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Juniperus communis</i> H.T.	Mountains of central Idaho, northwestern Wyoming, and Utah; mountains of northern Arizona and New Mexico	Warm to cold dry	Seral to or co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>A. concolor</i> (AZ,NM only) <i>P. pungens</i> (UT) <i>Pinus longaeva</i> (UT)	<i>J. communis</i> <i>P. secunda</i> <i>Shepherdia</i> <i>canadensis</i> <i>V. globulare</i> <i>Rosa woodsii</i> <i>S. oreophilus</i>	Mauk and Hender- son 1980 Moir and Ludwig 1979 Steele et al. 1981, 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Linnaea borealis</i> H.T. (MT,ID,WY) <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>L. borealis</i> P.C. (CO)	Mountains of Montana, central and southern Idaho, north- western Wyo- ming, and central Colorado	Cool moist to well- drained	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>L. occidentalis</i> <i>P. ponderosa</i>	<i>L. borealis</i> <i>A. cordifolia</i> <i>V. scoparium</i> <i>C. rubescens</i> <i>Rubus parviflorus</i>	Pfister et al. 1977 Steele et al. 1981, 1983 Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> H.T.	Mountains of southeastern Washington, eastern Oregon, Montana, Idaho, and northwestern Wyoming	Cool moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>Pinus monticola</i> <i>L. occidentalis</i> <i>P. albicaulis</i>	<i>M. ferruginea</i> <i>V. globulare</i> <i>Rhododendron albi- florum</i> <i>Ledum glandulosum</i> <i>A. latifolia</i> <i>X. tenax</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Oplopanax horridum</i> H.T.	Mountains of northern Montana	Cool moist to wet	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. monticola</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>O. horridum</i> <i>Taxus brevifolia</i>	Pfister et al. 1977
<i>Abies lasiocarpa</i> / <i>Pachistima myrsinites</i> H.T., <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>P. myrsinites</i> P.C. (CO)	Mountains of eastern Washington and northern Idaho; mountains of central and southern Colo- rado	Warm dry to well- drained	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. monticola</i> <i>P. tremuloides</i> <i>L. occidentalis</i>	<i>P. myrsinites</i> <i>Clintonia uniflora</i> <i>G. triflorum</i> <i>C. geyeri</i> <i>Erigeron</i> spp.	Daubenmire and Daubenmire 1968 Hess and Wasser 1982 Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of eastern Idaho, northwestern Wyoming, and northern and central Utah	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>A. concolor</i>	<i>P. malvaceus</i> <i>A. cordifolia</i> <i>Amelanchier alnifolia</i> <i>Sorbus scopulina</i> <i>A. glabrum</i> <i>S. canadensis</i>	Mauk and Hender- son 1984 Steele et al. 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Ribes montigenum</i> H.T.	Mountains of southern Mon- tana, Idaho, Utah, and northwestern Wyoming	Cool dry	Seral to or co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>R. montigenum</i> <i>A. latifolia</i> <i>T. fendleri</i> <i>Antennaria</i> <i>microphylla</i> <i>Mertensia arizonica</i>	Mauk and Hender- son 1984 Pfister 1972 Pfister et al. 1977 Steele et al. 1981, 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Rubus parviflorus</i> H.T.	Mimbres and Mogollon Moun- tains, New Mex- ico; San Juan Mountains, Colo- rado	Warm moist	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. tremuloides</i>	<i>R. parviflorus</i> <i>Vaccinium myrtillus</i> <i>A. glabrum</i> <i>P. myrsinites</i>	DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Salix pseudolapponum</i> H.T. [<i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>S. glauca</i> H.T.]	High mountains of Colorado	Cold wet	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. flexilis</i>	<i>S. pseudolapponum</i> <i>V. myrtillus</i> <i>P. pulcherrimum</i> <i>Acomastylis rossii</i>	Hess 1981 Hess and Wasser 1982 Komarkova 1984

Table A7.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Shepherdia canadensis</i> H.T. (WY) <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>S. canadensis</i> P.C. (CO)	Bighorn Mountains, north-central Wyoming; moun- tains of north- central Colorado	Cool to warm dry	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>S. canadensis</i> <i>V. scoparium</i>	Hoffman and Alex- ander 1976 Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Spiraea betulifolia</i> H.T.	Mountains of southern Idaho, and northwestern Wyoming	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>S. betulifolia</i> <i>C. geyeri</i> <i>C. rubescens</i> <i>P. myrsinites</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Symphoricarpos albus</i> H.T.	Mountains of southeastern Idaho, and north- western Wyoming	Warm well- drained lower slopes	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>S. albus</i> <i>A. alnifolia</i> <i>C. rubescens</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of south-central Montana, central Idaho, northern and central Utah	Cool well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>P. menziesii</i>	<i>V. caespitosum</i> <i>L. borealis</i> <i>C. rubescens</i> <i>V. scoparium</i> <i>A. cordifolia</i>	Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Vaccinium globulare</i> H.T.	Mountains of south-central Montana, central southern Idaho, northern Utah, and northwestern Wyoming	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. tremuloides</i> (UT)	<i>V. globulare</i> <i>P. myrsinites</i> <i>Lonicera utahensis</i> <i>A. cordifolia</i>	Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Vaccinium mem- branaceum</i> H.T.	Mountains of central Utah	Warm dry to well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>V. membranaceum</i> <i>P. myrsinites</i> <i>C. rossii</i>	Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Vaccinium myrtillus</i> H.T. [<i>A. lasiocarpa</i> / <i>V. myrtillus</i> - <i>Linnaea borealis</i> H.T.] [<i>A. lasiocarpa</i> / <i>V. myrtillus</i> - <i>Rubus parviflorus</i> H.T.] [<i>A. lasiocarpa</i> / <i>Vaccinium scoparium</i> - <i>L. borealis</i> H.T.]	Mountains of eastern Arizona, northern New Mexico, and southern Colo- rado; LaSal Moun- tains, Utah	Cool well- drained	Climax (AZ) or co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>A. concolor</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. aristata</i> <i>P. flexilis</i> <i>P. pungens</i> <i>P. strobiformis</i>	<i>V. myrtillus</i> <i>V. scoparium</i> <i>Lonicera involucrata</i> <i>P. myrsinites</i> <i>A. cordifolia</i> <i>R. montigenum</i> <i>L. borealis</i> <i>R. parviflorus</i>	Alexander et al. 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Vaccinium scoparium</i> H.T. <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>V. scoparium</i> H.T.; P.C. [<i>P. engelmannii</i> / <i>V. scoparium</i> H.T.]	Mountains of Montana and Idaho south to Arizona and New Mexico	Cool dry	Climax, co-climax with or minor climax to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>P. tremuloides</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>V. scoparium</i> <i>C. rubescens</i> <i>V. myrtillus</i> <i>A. cordifolia</i> <i>C. geyeri</i> <i>Erigeron superbus</i> (<i>E. eximius</i>) <i>L. borealis</i> <i>P. myrsinites</i> <i>Phyllodoce empetri- formis</i>	Daubenmire and Daubenmire 1968 Hess 1981 Hess and Wasser 1982 Hoffman and Alex- ander 1976, 1980, 1983 Komarkova 1984 Mauk and Hender- son 1984 Moir and Ludwig 1979 Pfister 1972 Pfister et al. 1977 Steele et al. 1981, 1983 Steen and Dix 1974 Wirsing and Alex- ander 1975

Table A7.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> - <i>Pinus albicaulis</i> / <i>Vaccinium scoparium</i> H.T.	Mountains of Montana east of Continental Divide	Cool dry	Seral to <i>A. lasiocarpa</i> <i>P. albicaulis</i>	<i>A. lasiocarpa</i> <i>P. albicaulis</i> <i>P. contorta</i>	<i>V. scoparium</i> <i>C. geyeri</i> <i>X. tenax</i> <i>A. latifolia</i>	Pfister et al. 1977
<i>Abies lasiocarpa</i> / <i>Xerophyllum tenax</i> H.T.	Mountains of northern Idaho, eastern Washington and Oregon, southern Idaho, Montana, and northwestern Wyoming	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. albicaulis</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. ponderosa</i>	<i>X. tenax</i> <i>V. membranaceum</i> <i>V. scoparium</i> <i>V. globulare</i> <i>Luzula hitchcockii</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Calamagrostis canadensis</i> H.T. <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>C. canadensis</i> H.T. [<i>P. engelmannii</i> / <i>C. canadensis</i> H.T.]	Mountains of central Montana, Idaho, north- western Wyo- ming, northern Utah, north- central and western Colorado	Cool wet	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>P. menziesii</i> <i>P. pungens</i>	<i>C. canadensis</i> <i>V. caespitosum</i> <i>L. glandulosum</i> <i>S. triangularis</i> <i>G. triflorum</i>	Cooper et al. 1983 Hess 1981 Komarkova 1984 Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Calamagrostis rubescens</i> H.T.	Mountains of Montana east of Continental Divide, southern Idaho, and north- western Wyoming	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>C. rubescens</i> <i>O. chilensis</i> <i>T. occidentale</i> <i>C. geyeri</i> <i>A. cordifolia</i> <i>P. myrsinites</i>	Pfister et al. 1977 Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Luzula hitchcockii</i> H.T.	Mountains of Montana west of Continental Divide, Idaho, and northwestern Wyoming	Cool well- drained	Seral or minor climax to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. albicaulis</i>	<i>L. hitchcockii</i> <i>A. latifolia</i> <i>X. tenax</i> <i>A. cordifolia</i> <i>V. scoparium</i> <i>M. ferruginea</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Carex geyeri</i> H.T., <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> - <i>C. geyeri</i> H.T.; P.C. [<i>P. engelmannii</i> / <i>C. geyeri</i> H.T.]	Mountains of Idaho, southern Utah, Wyoming, north-central and western Colorado	Cool dry to warm dry	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>C. geyeri</i> <i>A. cordifolia</i> <i>S. oreophilus</i> <i>Lupinus argenteus</i> <i>B. repens</i> <i>Lathyrus lanszwertii</i>	Hess 1981 Hess and Wasser 1981 Hoffman and Alex- ander 1980, 1983 Komarkova 1984 Steele et al. 1981, 1983 Steen and Dix 1974 Wirsing and Alex- ander 1975 Youngblood 1984
<i>Abies lasiocarpa</i> <i>Carex rossii</i> H.T.	Mountains of central and southern Utah	Cool dry	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>C. rossii</i> <i>A. cordifolia</i> <i>A. miser</i> <i>R. woodsii</i>	Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Aconitum columbianum</i> H.T.	Mountains of southern and central Utah	Cool moist	Seral to or co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>A. concolor</i>	<i>A. columbianum</i> <i>Actaea rubra</i> <i>A. cordifolia</i> <i>B. ciliatus</i>	Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Actaea rubra</i> H.T.	Mountains of central Idaho, northern Utah, and northwestern Wyoming	Warm moist	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. pungens</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>A. rubra</i> <i>O. chilensis</i> <i>L. utahensis</i> <i>V. globulare</i>	Mauk and Hender- son 1984 Steele et al. 1983

Table A7.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Arnica cordifolia</i> H.T.	Mountains of Montana east of Continental Divide, central Idaho, north- western and north-central Wyoming, and western Colorado	Cool well- drained	Seral to or co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>A. cordifolia</i> <i>P. secunda</i> <i>A. miser</i> <i>F. virginiana</i> [<i>P. tremuloides</i>]	Hoffman and Alex- ander 1976 Komarkova 1984 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Arnica latifolia</i> H.T.	Mountains of southern Idaho, northern Utah, and northwestern Wyoming	Cool dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>A. latifolia</i> <i>Aster engelmannii</i> <i>Pedicularis</i> <i>racemosa</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Caltha biflora</i> H.T.	Mountains of central Idaho	Cool wet	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i>	<i>C. biflora</i> <i>L. involucreta</i> <i>Pedicularis</i> <i>bracteosa</i> <i>Dodecatheon jeffreyi</i>	Steele et al. 1981
<i>Abies lasiocarpa</i> - <i>Picea engelmannii</i> / <i>Cardamine cordifolia</i> P.C. [<i>A. lasiocarpa</i> / <i>Mertensia ciliata</i> H.T.]	Mountains of central and southern Colo- rado	Cool wet	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>C. cordifolia</i> <i>Mertensia ciliata</i> <i>Mitella pentandra</i> <i>Carex bella</i>	DeVelice et al. 1984 Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northwestern Montana, north- ern and central Idaho	Warm moist to dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>P. monticola</i> <i>A. grandis</i> <i>P. ponderosa</i>	<i>C. uniflora</i> <i>M. ferruginea</i> <i>V. caespitosum</i> <i>A. nudicaulis</i> <i>X. tenax</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Coptis occidentalis</i> H.T.	Mountains of central and north- ern Idaho	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>P. contorta</i> <i>A. grandis</i>	<i>C. occidentalis</i> <i>X. tenax</i> <i>V. globulare</i> <i>M. ferruginea</i>	Cooper et al. 1983 Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Erigeron superbus</i> (<i>E. eximius</i>) H.T.	Mountains of southwestern Colorado, north- ern New Mexico, and Arizona	Cool dry	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. ponderosa</i> <i>A. concolor</i> <i>P. menziesii</i> <i>P. strobiformis</i> <i>P. tremuloides</i> <i>P. pungens</i>	<i>E. superbus</i> (<i>E. eximius</i>) <i>G. richardsonii</i> <i>L. arizonicus</i> <i>L. involucreta</i> <i>A. cordifolia</i> <i>B. repens</i>	Alexander et al. 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Galium triflorum</i> H.T.	Mountains of Montana	Warm moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>G. triflorum</i> <i>A. rubra</i> <i>S. amplexifolius</i>	Pfister et al. 1977
<i>Abies lasiocarpa</i> - <i>Picea engelmannii</i> / <i>Lupinus argenteus</i> P.C.	Mountains of central and southern Colo- rado	Warm well- drained	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i>	<i>L. argenteus</i> <i>V. scoparium</i>	Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Osmorhiza chilensis</i> H.T.	Mountains of southern Idaho and northern Utah	Warm moist to well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>O. chilensis</i> <i>C. rossii</i> <i>B. repens</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984 Steele et al. 1983

Table A7.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Pedicularis racemosa</i> H.T.	Mountains of southeastern Idaho, north- western Wyo- ming, and north- ern Utah	Warm dry	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>P. racemosa</i> <i>A. cordifolia</i> <i>S. oreophilus</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Polemonium delicatum</i> H.T., <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>P. delicatum</i> P.C.	Mountains of central and western Colorado	Cool dry	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>P. delicatum</i> <i>Osmorhiza obtusa</i> <i>Vaccinium</i> spp.	Komarkova 1984 Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Senecio sanguisorboides</i> H.T.	Sacramento Mountains, south- ern New Mexico	Cool dry to well- drained	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>S. sanguisorboides</i> <i>R. montigenum</i> <i>Ribes wolfii</i>	Alexander et al. 1984a Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Senecio triangularis</i> H.T., <i>Picea engelmannii</i> / <i>S. triangularis</i> H.T. [<i>P. engelmannii</i> / <i>S. triangularis</i> H.T.]	Mountains of central and western Colorado	Cool wet	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i>	<i>S. triangularis</i> <i>M. ciliata</i> <i>C. cordifolia</i> <i>E. arvense</i>	Hess 1981 Komarkova 1984
<i>Abies lasiocarpa</i> / <i>Streptopus amplexifolius</i> H.T.	Mountains of Idaho to north- western Utah	Warm to moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i>	<i>S. amplexifolius</i> <i>S. triangularis</i> <i>A. columbianum</i> <i>Ligusticum canbyi</i>	Cooper et al. 1983 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Thalictrum occidentale</i> H.T.	Mountains of southeastern Idaho and north- western Wyoming	Warm well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>T. occidentale</i> <i>A. cordifolia</i> <i>O. chilensis</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / Moss spp. H.T., <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / Moss spp. P.C.	Mountains of northern New Mexico, and southern and western Colorado	Cool dry	Co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. tremuloides</i> <i>P. aristata</i> <i>P. contorta</i> (CO) <i>P. menziesii</i> (NM)	Moss spp. <i>Rosa</i> spp. <i>V. caespitosum</i>	DeVelice et al. 1984 Komarkova 1984 Steen and Dix 1974
<i>Picea pungens</i> series						
<i>Picea pungens</i> / <i>Linnaea borealis</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>L. borealis</i> H.T.]	Sangre de Cristo Mountains, south- ern Colorado and northern New Mexico	Cool well- drained	Minor climax to <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. tremuloides</i> <i>A. lasiocarpa</i>	<i>L. borealis</i> <i>P. myrsinites</i> <i>V. myrtillus</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Carex foenea</i> H.T.	Mountains of north-central and northwestern New Mexico	Cool moist	Minor climax to <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>C. foenea</i> <i>A. glabrum</i> <i>Festuca arizonica</i> <i>E. eximius</i> (<i>E. superbus</i>)	Alexander et al. 1984c
<i>Picea pungens</i> / <i>Equisetum arvense</i> H.T.	Mountains of southern Utah	Warm to cool wet	Minor climax to <i>P. pungens</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>E. arvense</i> <i>G. richardsonii</i> <i>T. fendleri</i> <i>O. chilensis</i>	Youngblood 1984

Table A7.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Picea pungens</i> / <i>Erigeron eximius</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> / <i>E. superbus</i> H.T.]	Mountains of northern New Mexico and southern Colo- rado	Cool dry	Minor climax to <i>P. pungens</i> <i>P. menziesii</i> <i>A. concolor</i>	<i>A. lasiocarpa</i> (minor climax) <i>P. pungens</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. tremuloides</i> <i>P. strobiformis</i> <i>P. ponderosa</i> <i>P. flexilis</i>	<i>E. superbus</i> (<i>E. eximius</i>) <i>F. arizonica</i> <i>C. foenea</i> <i>F. virginiana</i> <i>G. richardsonii</i> <i>T. fendleri</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Fragaria ovalis</i> H.T.	Mountains of New Mexico	Cool moist	Minor climax to <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>P. tremuloides</i> <i>A. concolor</i> <i>A. lasiocarpa</i>	<i>F. ovalis</i> <i>C. foenea</i> <i>F. arizonica</i> <i>E. superbus</i> (<i>E. eximius</i>)	Alexander et al. 1984a Fitzhugh et al. 1984
<i>Picea pungens</i> / <i>Senecio cardamine</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> / <i>S. cardamine</i> H.T.]	White Mountains, Arizona	Cool moist	Co-climax with <i>P. pungens</i>	<i>A. lasiocarpa</i> (minor climax) <i>P. pungens</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. strobiformis</i> <i>P. tremuloides</i> <i>P. ponderosa</i>	<i>S. cardamine</i> <i>Pteridium aquilinum</i> <i>Helenium hoopesii</i> <i>V. canadensis</i>	Moir and Ludwig 1979
<i>Pinus contorta</i> series and other <i>P. contorta</i> dominated vegetation						
<i>Pinus contorta</i> / <i>Arctostaphylos uva-ursi</i> H.T. (UT); P.C. (CO)	Uinta Mountains, Utah; mountains of north-central Colorado	Warm dry	Minor climax to <i>P. contorta</i> (UT). Ultimate climax unknown (CO). Probably co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. tremuloides</i> <i>P. contorta</i>	<i>A. uva-ursi</i> <i>B. repens</i> <i>Sitanion hystrix</i>	Mauk and Hender- son 1984 Steen and Dix 1974
<i>Pinus contorta</i> / <i>Juniperus communis</i> H.T. (CO); C.T. (ID,WY)	Mountains of eastern Idaho, northwestern Wyoming, and north-central Colorado	Warm dry	Minor climax to <i>P. contorta</i> (CO). Ultimate climax unknown (ID,WY). Probably seral to or co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. albicaulis</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>S. canadensis</i> <i>A. cordifolia</i>	Hess 1981 Steele et al. 1983
<i>Pinus contorta</i> / <i>Linnaea borealis</i> C.T. (MT,WY); P.C. (CO)	Mountains of Montana east of Continental Divide, north- western Wyo- ming, and north- central Colorado	Cool moist to well- drained	Ultimate climax unknown. Probably seral to or co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>L. borealis</i> <i>V. scoparium</i> <i>V. globulare</i> <i>A. cordifolia</i> <i>C. rubescens</i>	Pfister et al. 1977 Steele et al. 1983 Steen and Dix 1974

Table A7.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus contorta</i> / <i>Pachistima myrsinites</i> P.C.	Mountains of north-central Colorado	Warm dry to well- drained	Ultimate climax unknown. Probably co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. tremuloides</i> <i>P. contorta</i>	<i>P. myrsinites</i> <i>V. scoparium</i> <i>J. communis</i> <i>L. borealis</i> <i>Lathyrus leucanthus</i>	Steen and Dix 1974
<i>Pinus contorta</i> / <i>Purshia tridentata</i> H.T.	Mountains of western Montana	Cool-warm dry to well- drained	Seral to <i>P. menziesii</i> <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>P. tridentata</i> <i>A. uva-ursi</i> <i>C. rossii</i> <i>Lupinus</i> spp. <i>Epilobium angusti- folium</i>	Pfister et al. 1977
<i>Pinus contorta</i> / <i>Shepherdia canadensis</i> C.T. (ID,WY); P.C. (CO)	Mountains of southeastern Idaho, north- western Wyoming and central Colo- rado	Cool-warm dry to well- drained	Ultimate climax unknown. Probably co-climax with <i>P. menziesii</i> <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>S. canadensis</i> <i>A. cordifolia</i> <i>J. communis</i> <i>L. borealis</i> <i>A. uva-ursi</i>	Steen and Dix 1974 Steele et al. 1983
<i>Pinus contorta</i> / <i>Spiraea betulifolia</i> C.T.	Mountains of eastern Idaho and northwestern Wyoming	Warm dry	Ultimate climax unknown. Probably seral or minor climax to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>S. betulifolia</i> <i>C. rubescens</i> <i>C. geyeri</i>	Steele et al. 1983
<i>Pinus contorta</i> / <i>Vaccinium caespitosum</i> C.T.	Mountains of south-central Montana, Idaho, and northern Utah	Cool well- drained	Ultimate climax unknown. Probably seral or minor climax to <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>V. caespitosum</i> <i>V. scoparium</i> <i>Festuca ovina</i> <i>L. borealis</i>	Cooper et al. 1983 Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981
<i>Pinus contorta</i> / <i>Vaccinium globulare</i> C.T.	Mountains of southern Idaho, northwestern Wyoming, and northern Utah	Cool well- drained	Ultimate climax unknown. Probably seral or minor climax to <i>A. lasiocarpa</i> <i>P. menziesii</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>V. globulare</i> <i>L. utahensis</i> <i>V. scoparium</i> <i>C. rubescens</i>	Steele et al. 1983
<i>Pinus contorta</i> / <i>Vaccinium scoparium</i> C.T.; P.C. (CO)	Mountains of Montana, Idaho, and northwestern Wyoming; Uinta Mountains of Utah, mountains of southern Wyo- ming and central Colorado	Cool to cold dry	Ultimate climax unknown. Probably minor climax to or co-climax with <i>A. lasiocarpa</i>	<i>P. menziesii</i> <i>A. lasiocarpa</i> <i>P. albicaulis</i> <i>P. flexilis</i> <i>Abies grandis</i> <i>Tsuga hetero- phylla</i> <i>L. occidentalis</i> <i>P. contorta</i>	<i>V. scoparium</i> <i>C. rubescens</i> <i>A. cordifolia</i> <i>L. argenteus</i> <i>B. repens</i> <i>C. geyeri</i> <i>Ribes cereum</i> <i>L. borealis</i>	Cooper et al. 1983 Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981, 1983 Steen and Dix 1974 Wirsing and Alex- ander 1975

Table A7.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus contorta</i> / <i>Xerophyllum tenax</i> C.T.	Mountains of northern Idaho	Warm dry	Ultimate climax unknown. Probably seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i>	<i>X. tenax</i> <i>Vaccinium</i> spp.	Cooper et al. 1984
<i>Pinus contorta</i> / <i>Calamagrostis canadensis</i> C.T.	Uinta Mountains, Utah	Cool moist	Ultimate climax unknown. Probably seral or minor climax to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i>	<i>C. canadensis</i> <i>A. cordifolia</i> <i>J. communis</i> <i>Poa nervosa</i>	Mauk and Hender- son 1984
<i>Pinus contorta</i> / <i>Calamagrostis rubescens</i> C.T.	Mountains of Montana, Idaho, northeastern Utah, and north- western Wyoming	Warm dry	Ultimate climax unknown. Probably seral or minor climax to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>P. contorta</i>	<i>C. rubescens</i> <i>V. scoparium</i> <i>C. geyeri</i> <i>A. cordifolia</i> <i>A. uva-ursi</i>	Pfister et al. 1977 Steele et al. 1983
<i>Pinus contorta</i> / <i>Carex geyeri</i> H.T. (CO); C.T. (ID,WY)	Mountains of central Idaho, northwestern Wyoming, south- ern Wyoming, and north-central Colorado	Cool dry	Ultimate climax unknown. Probably seral to or co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. albicaulis</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>C. geyeri</i> <i>S. oreophilus</i> <i>A. cordifolia</i> <i>L. argenteus</i> <i>B. repens</i> <i>J. communis</i>	Hess 1981 Hess and Wasser 1982 Steele et al. 1981, 1983 Steen and Dix 1974 Wirsing and Alex- ander 1975
<i>Pinus contorta</i> / <i>Carex rossii</i> C.T.	Mountains of northwestern Wyoming	Warm dry	Ultimate climax unknown. Probably seral to or co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>P. albicaulis</i>	<i>C. rossii</i> <i>L. argenteus</i> <i>P. nervosa</i>	Steele et al. 1983
<i>Pinus contorta</i> / <i>Arnica cordifolia</i> C.T.	Mountains of eastern Idaho and northwestern Wyoming	Cool dry	Ultimate climax unknown. Probably seral or minor climax to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. albicaulis</i> <i>P. flexilis</i> <i>P. contorta</i>	<i>A. cordifolia</i> <i>Antennaria racemosa</i> <i>A. miser</i> <i>P. secunda</i>	Steele et al. 1983
<i>Pinus contorta</i> / <i>Lupinus argenteus</i> P.C.	Mountains of central and southern Colo- rado	Warm dry to well- drained	Ultimate climax unknown. Probably co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. tremuloides</i> <i>P. contorta</i>	<i>L. argenteus</i>	Steen and Dix 1974
<i>Populus tremuloides</i> series and other <i>P. tremuloides</i> dominated vegetation						
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Berberis repens</i> C.T., <i>P. tremuloides</i> / <i>B. repens</i> C.T.	Mountains of western Wyoming	Warm to cool well- drained	Seral or minor climax to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>B. repens</i> <i>S. albus</i> <i>P. myrsinites</i>	Youngblood and Mueggler 1981

Table A7.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Populus tremuloides</i> / <i>Pachistima myrsinites</i> P.C.	Mountains of central and southwestern Colorado	Warm dry	Ultimate climax unknown. Probably co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>P. myrsinites</i> <i>V. scoparium</i> <i>C. geyeri</i>	Steen and Dix 1974
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Shepherdia canadensis</i> C.T., <i>P. tremuloides</i> / <i>S. canadensis</i> C.T.	Mountains of western Wyoming	Cool dry to well- drained	Minor climax to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>S. canadensis</i> <i>A. cordifolia</i> <i>R. woodsii</i> <i>T. fendleri</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Elymus glaucus</i> P.C.	Mountains of central and southwestern Colorado	Warm moist to well- drained	Ultimate climax unknown. Probably co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>E. glaucus</i> <i>A. alnifolia</i> <i>Symphoricarpos</i> spp. <i>Ligusticum porteri</i>	Steen and Dix 1974
<i>Populus tremuloides</i> / <i>Festuca thurberi</i> P.C.	Mountains of southwestern Colorado	Warm dry	Ultimate climax unknown. Probably co-climax with <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>F. thurberi</i> <i>B. repens</i> <i>S. oreophilus</i> <i>F. ovalis</i>	Steen and Dix 1974
<i>Populus tremuloides</i> / <i>Equisetum arvense</i> C.T.	Mountains of western Wyoming	Cool wet	Probably climax	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>E. arvense</i> <i>E. glaucus</i> <i>T. fendleri</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Heracleum lanatum</i> C.T.	Mountains of western Wyoming	Warm moist	Seral or minor climax to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>H. lanatum</i> <i>P. bracteosa</i> <i>T. fendleri</i> <i>E. glaucus</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Ligusticum filicinum</i> C.T., <i>P. tremuloides</i> / <i>L. filicinum</i> C.T.	Mountains of western Wyoming	Cool moist to well- drained	Minor climax to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>L. filicinum</i> <i>T. fendleri</i> <i>Geranium</i> <i>viscosissimum</i> <i>Osmorhiza occiden-</i> <i>talis</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Pedicularis racemosa</i> C.T.	Mountains of western Wyoming	Cool moist	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. tremuloides</i> <i>P. menziesii</i>	<i>P. racemosa</i> <i>A. cordifolia</i> <i>S. oreophilus</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Ranunculus alismaefolius</i> C.T.	Mountains of western Wyoming	Cool moist to wet	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>R. alismaefolius</i> <i>Carex microptera</i> <i>Trifolium longipes</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Rudbeckia occidentalis</i> C.T., <i>P. tremuloides</i> / <i>R. occidentalis</i> C.T.	Mountains of southeastern Idaho and western Wyoming	Cool moist to well- drained	Seral to <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>R. occidentalis</i> <i>T. longipes</i> <i>Nemophila breviflora</i> <i>Melica spectabilis</i>	Mueggler and Campbell 1982 Youngblood and Mueggler 1981

Table A7.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Thuja plicata</i> series						
<i>Thuja plicata</i> / <i>Oplopanax horridum</i> H.T.	Mountains of northern Idaho, eastern Washington and Oregon	Cool moist	Seral to <i>T. plicata</i> <i>T. heterophylla</i>	<i>T. plicata</i> <i>T. heterophylla</i> <i>L. occidentalis</i> <i>Pinus monticola</i> <i>A. grandis</i>	<i>O. horridum</i> <i>Athyrium felix- femina</i> <i>Dryopteris dilatata</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968
<i>Thuja plicata</i> / <i>Pachistima myrsinites</i> H.T.	Mountains of northern Idaho, eastern Washington and Oregon	Warm dry to well- drained	Seral to <i>T. plicata</i>	<i>T. plicata</i> <i>P. monticola</i> <i>L. occidentalis</i> <i>P. menziesii</i> <i>P. contorta</i> <i>A. grandis</i>	<i>P. myrsinites</i> <i>A. glabrum</i> <i>G. triflorum</i>	Daubenmire and Daubenmire 1968
<i>Thuja plicata</i> / <i>Athyrium felix-femina</i> H.T.	Mountains of northern Idaho, eastern Washington and Oregon	Cool wet	Seral to <i>T. plicata</i>	<i>T. plicata</i> <i>P. monticola</i> <i>A. grandis</i> <i>P. menziesii</i>	<i>A. felix-femina</i> <i>G. triflorum</i> <i>S. triangularis</i> <i>S. amplexifolius</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968
<i>Thuja plicata</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northern Idaho and northwestern Montana	Cool to warm moist bot- tomlands	Seral to <i>T. plicata</i>	<i>T. plicata</i> <i>A. lasiocarpa</i> <i>A. grandis</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>P. contorta</i>	<i>A. nudicaulis</i> <i>C. uniflora</i> <i>M. ferruginea</i> <i>X. tenax</i>	Cooper et al. 1983 Pfister et al. 1977
<i>Pseudotsuga menziesii</i> series						
<i>Pseudotsuga menziesii</i> / <i>Pachistima myrsinites</i> H.T.	Mountains of west-central Colo- rado	Warm dry	Minor climax to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>P. myrsinites</i> <i>S. oreophilus</i> <i>A. cordifolia</i> <i>B. repens</i> <i>V. myrtillus</i>	Hess and Wasser 1982
<i>Pseudotsuga menziesii</i> / <i>Holodiscus dumosus</i> H.T. (Scree Forest)	Mountains of New Mexico and southern Colo- rado	Warm dry to well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>A. lasiocarpa</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>H. dumosus</i> <i>Salix</i> spp. <i>S. oreophilus</i> <i>B. ciliatus</i>	DeVelice et al. 1984 Fitzhugh et al. 1984
<i>Abies grandis</i> series						
<i>Abies grandis</i> / <i>Linnaea borealis</i> H.T.	Mountains of Montana and Idaho	Cool moist to well- drained	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> <i>P. monticola</i> <i>P. ponderosa</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>L. borealis</i> <i>Disporum hookeri</i> <i>A. cordifolia</i> <i>V. globulare</i>	Pfister et al. 1977 Steele et al. 1981
<i>Abies grandis</i> / <i>Pachistima myrsinites</i> H.T.	Mountains of northern Idaho, eastern Washington and Oregon	Warm well- drained	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>P. contorta</i> <i>P. monticola</i>	<i>P. myrsinites</i> <i>G. triflorum</i> <i>S. stellata</i> <i>T. occidentale</i>	Daubenmire and Daubenmire 1968
<i>Abies grandis</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of central Idaho	Cool well- drained	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>V. caespitosum</i> <i>F. virginiana</i> <i>C. rubescens</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Vaccinium globulare</i> H.T.	Mountains of central Idaho	Cool well- drained	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i>	<i>V. globulare</i>	Steele et al. 1983

Table A7.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Abies grandis</i> / <i>Xerophyllum tenax</i> H.T.	Mountains of northern Idaho	Cool dry	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> <i>P. ponderosa</i> <i>P. contorta</i> <i>P. menziesii</i>	<i>X. tenax</i> <i>V. globulare</i>	Cooper et al. 1983
<i>Abies grandis</i> / <i>Clintonia uniflora</i> H.T.	Mountains of western Montana, northern and central Idaho	Warm moist	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>C. uniflora</i> <i>L. borealis</i> <i>Adenocaulon bicolor</i> <i>X. tenax</i> <i>M. ferruginea</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Abies grandis</i> / <i>Coptis occidentalis</i> H.T.	Mountains of northern Idaho	Warm moist	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>A. lasiocarpa</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. ponderosa</i>	<i>C. occidentalis</i> <i>V. globulare</i> <i>X. tenax</i> <i>S. albus</i>	Cooper et al. 1983
<i>Abies grandis</i> / <i>Senecio triangularis</i> H.T.	Mountains of northern Idaho	Warm moist	Seral to <i>A. grandis</i>	<i>A. grandis</i> <i>L. occidentalis</i> <i>A. lasiocarpa</i>	<i>S. triangularis</i> <i>A. felix-femina</i> <i>Trautretteria caroli- niensis</i>	Cooper et al. 1983
<i>Abies concolor</i> / <i>Acer glabrum</i> H.T.	Mountains of northern New Mexico and Arizona	Warm dry	Minor climax to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. pungens</i> <i>P. tremuloides</i> <i>P. strobiformis</i> <i>A. lasiocarpa</i> <i>P. ponderosa</i>	<i>A. glabrum</i> <i>A. alnifolia</i> <i>B. repens</i> <i>P. myrsinites</i>	DeVelice et al. 1984 Fitzhugh et al. 1984
<i>Abies concolor</i> series						
<i>Abies concolor</i> / <i>Robinia neomexicana</i> H.T. [<i>A. concolor</i> - <i>Pseudotsuga menziesii</i> / <i>R. neomexicana</i> H.T.]	Mountains of New Mexico and Arizona	Warm dry	Minor climax to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. ponderosa</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>S. oreophila</i> <i>R. neomexicana</i> <i>Quercus gambelii</i>	Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies concolor</i> / <i>Vaccinium myrtillus</i> H.T.	Mountains of northern New Mexico and southern Colo- rado	Cool dry	Minor climax to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. pungens</i> <i>A. lasiocarpa</i> <i>P. tremuloides</i>	<i>V. myrtillus</i> <i>A. glabrum</i> <i>A. uva-ursi</i> <i>P. myrsinites</i> <i>R. parviflorus</i>	DeVelice et al. 1984
<i>Abies concolor</i> / <i>Erigeron eximius</i> H.T.	Mountains of northern New Mexico	Cool moist	Minor climax to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. pungens</i> <i>P. tremuloides</i>	<i>E. eximius</i> (<i>E. superbus</i>) <i>C. foenea</i> <i>Lathyrus</i> spp. <i>Fragaria</i> spp.	DeVelice et al. 1984
<i>Abies concolor</i> / <i>Osmorhiza chilensis</i> H.T.	Wasatch Moun- tains, Utah	Warm moist	Seral to <i>A. concolor</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>A. grandis</i> <i>P. tremuloides</i>	<i>O. chilensis</i> <i>P. malvaceus</i> <i>P. myrsinites</i> <i>P. virginiana</i>	Mauk and Hender- son 1984
<i>Tsuga heterophylla</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northern Idaho and northwestern Montana	Warm moist	Seral to <i>T. heterophylla</i> <i>T. plicata</i>	<i>T. heterophylla</i> <i>T. plicata</i> <i>P. monticola</i> <i>P. contorta</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>C. uniflora</i> <i>A. nudicaulis</i> <i>X. tenax</i> <i>M. ferruginea</i>	Cooper et al. 1983 Pfister et al. 1977

Table A7.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Tsuga heterophylla</i> series						
<i>Tsuga heterophylla</i> / <i>Gymnocarpium dryopteris</i> H.T.	Mountains of northern Idaho	Warm moist	Seral to <i>T. heterophylla</i>	<i>T. heterophylla</i> <i>A. grandis</i> <i>L. occidentalis</i> <i>T. plicata</i> <i>P. monticola</i>	<i>G. dryopteris</i> <i>P. myrsinites</i>	Cooper et al. 1983
<i>Tsuga mertensiana</i> series						
<i>Tsuga mertensiana</i> / <i>Menziesia ferruginea</i> H.T.	Mountains of northern Idaho, western Washington, and southern British Columbia to central Oregon	Cool moist	Seral to <i>T. mertensiana</i>	<i>T. mertensiana</i> <i>A. lasiocarpa</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>M. ferruginea</i> <i>X. tenax</i> <i>R. albiflorum</i> <i>L. hitchcockii</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977
<i>Tsuga mertensiana</i> <i>Xerophyllum tenax</i> H.T.	Mountains of northern Idaho and northwestern Montana	Warm dry	Seral to <i>T. mertensiana</i> <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>P. menziesii</i> <i>T. mertensiana</i> <i>P. monticola</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>L. occidentalis</i>	<i>X. tenax</i> <i>V. membranaceum</i> <i>V. globulare</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977
<i>Tsuga mertensiana</i> / <i>Luzula hitchcockii</i> H.T.	Mountains of Montana west of Continental Divide, central and southern Idaho, and north- western Wyoming	Cool well- drained	Seral to <i>T. mertensiana</i> <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>T. mertensiana</i> <i>P. contorta</i> <i>P. albicaulis</i>	<i>L. hitchcockii</i> <i>V. scoparium</i> <i>X. tenax</i> <i>A. latifolia</i>	Pfister et al. 1977
<i>Tsuga mertensiana</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northern Idaho	Warm moist	Seral to <i>T. mertensiana</i>	<i>T. mertensiana</i> <i>A. lasiocarpa</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>P. monticola</i> <i>P. contorta</i>	<i>C. uniflora</i> <i>X. tenax</i> <i>M. ferruginea</i>	Cooper et al. 1983
<i>Tsuga mertensiana</i> / <i>Streptopus amplexifolius</i> H.T.	Mountains of northern Idaho	Warm moist	Seral to <i>T. mertensiana</i>	<i>T. mertensiana</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>A. lasiocarpa</i>	<i>S. amplexifolius</i> <i>M. ferruginea</i> <i>S. triangularis</i> <i>T. caroliniensis</i>	Cooper et al. 1983
<i>Pinus flexilis</i> series						
<i>Pinus flexilis</i> / <i>Arctostaphylos uva-ursi</i> H.T.	Mountains of northern New Mexico and southern Colo- rado	Warm dry	Minor climax to <i>P. flexilis</i>	<i>P. flexilis</i> <i>P. menziesii</i> (minor climax)	<i>A. uva-ursi</i> <i>J. communis</i>	DeVelice et al. 1984
<i>Pinus flexilis</i> / <i>Calamagrostis</i> <i>purpurascens</i> H.T.	Mountains of Colorado, east of the Continental Divide	Cool dry	Minor climax to <i>P. flexilis</i>	<i>P. flexilis</i>	<i>C. purpurascens</i> <i>Carex</i> spp. <i>T. spicatum</i>	Hess 1981
<i>Pinus flexilis</i> / <i>Trifolium dasyphyllum</i> H.T.	Mountains of north-central Colorado	Cool dry	Minor climax to <i>P. flexilis</i>	<i>P. flexilis</i>	<i>T. dasyphyllum</i> <i>C. purpurascens</i> <i>C. foenea</i>	Hess 1981

Table A7.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>P. engelmannii</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus aristata</i> series						
<i>Pinus aristata</i> / <i>Festuca arizonica</i> H.T.	Mountains of southern Colo- rado	Warm dry	Co-climax with <i>P. aristata</i>	<i>P. aristata</i> (may form pure stands on drier sites)	<i>F. arizonica</i> <i>F. thurberi</i>	DeVelice et al. 1984
<i>Pinus aristata</i> / <i>Festuca thurberi</i> H.T.	San Juan and Sangre de Cristo Mountains, Colo- rado	Cool dry	Co-climax with <i>P. aristata</i>	<i>P. aristata</i>	<i>F. thurberi</i> <i>R. montigenum</i> <i>P. delicatum</i> (<i>P. pulcherrimum</i>)	DeVelice et al. 1984
<i>Pinus aristata</i> / <i>Trifolium dasyphyllum</i> H.T.	Mountains of north-central Colorado	Cool dry	Minor climax to <i>P. aristata</i>	<i>P. aristata</i>	<i>T. dasyphyllum</i> <i>C. purpurascens</i> <i>P. delicatum</i> (<i>P. pulcherrimum</i>)	Hess 1981
<i>Pinus albicaulis</i> series						
<i>Pinus albicaulis</i> / <i>Vaccinium scoparium</i> H.T.	Mountains of northwestern Wyoming	Cool dry	Minor climax to <i>P. albicaulis</i> <i>P. contorta</i>	<i>P. albicaulis</i> <i>P. contorta</i> <i>A. lasiocarpa</i>	<i>V. scoparium</i> <i>C. rossii</i> <i>A. cordifolia</i>	Steele et al. 1983
<i>Pinus albicaulis</i> / <i>Carex rossii</i> H.T.	Mountains of northwestern Wyoming	Cool dry	Minor climax to <i>P. albicaulis</i>	<i>P. albicaulis</i> <i>A. lasiocarpa</i> <i>P. contorta</i>	<i>C. rossii</i>	Steele et al. 1983
<i>Pinus albicaulis</i> - <i>Abies lasiocarpa</i> H.T.	Mountains of Montana and northern Idaho	Cool dry	Minor climax to <i>A. lasiocarpa</i> <i>P. albicaulis</i>	<i>A. lasiocarpa</i> <i>P. albicaulis</i>	<i>V. scoparium</i> <i>A. latifolia</i> <i>Hieracium gracile</i>	Cooper et al. 1983 Pfister et al. 1977
<i>Larix lyallii</i> series						
<i>Larix lyallii</i> - <i>Abies lasiocarpa</i> H.T.	Mountains of Montana west of Continental Divide, and north- ern Idaho	Cool dry	Minor climax to <i>L. lyallii</i> <i>A. lasiocarpa</i>	<i>A. lasiocarpa</i> <i>L. lyallii</i> <i>P. albicaulis</i>	<i>P. empetrifomis</i> <i>V. scoparium</i> <i>L. hitchcockii</i>	Cooper et al. 1983 Pfister et al. 1977

Table A8.—Habitat types, community types, and plant communities in which *Abies lasiocarpa* is a major climax, co-climax, minor climax, or seral.

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> series						
<i>Abies lasiocarpa</i> / <i>Acer glabrum</i> H.T.	Mountains of central and southern Idaho, northern and central Utah, and northwestern Wyoming; mountains of north-central and northwestern New Mexico	Warm moist	Climax	<i>Picea engelmannii</i> <i>Pseudotsuga menziesii</i> <i>Pinus contorta</i> <i>Populus tremuloides</i> <i>Abies concolor</i> <i>Picea pungens</i> <i>Pinus flexilis</i>	<i>A. glabrum</i> <i>Thalictrum occidentale</i> <i>Thalictrum fendleri</i> <i>Osmorhiza chilensis</i> <i>Arnica cordifolia</i> <i>Berberis repens</i> <i>Bromus ciliatus</i>	Alexander et al. 1984c Mauk and Henderson 1984 Steele et al. 1981, 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Alnus sinuata</i> H.T.	Mountains of northern Montana and central Idaho	Cool moist	Climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>Larix occidentalis</i>	<i>A. sinuata</i> <i>Xerophyllum tenax</i> <i>Vaccinium scoparium</i> <i>Vaccinium globulare</i>	Pfister et al. 1977 Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Berberis repens</i> H.T.	Mountains of Utah, northwestern Wyoming, and southeastern Idaho	Warm to cool well-drained	Climax	<i>P. engelmannii</i> (minor climax) <i>P. contorta</i> <i>P. pungens</i> <i>P. menziesii</i> <i>P. flexilis</i> <i>A. concolor</i> <i>P. tremuloides</i>	<i>B. repens</i> <i>Ribes montigenum</i> <i>Carex geyeri</i> <i>Pachistima myrsinites</i> <i>Symphoricarpos oreophilus</i>	Mauk and Henderson 1984 Pfister 1972 Steele et al. 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Clematis pseudoalpina</i> H.T.	Mountains of Montana east of Continental Divide	Warm dry	Climax	<i>P. engelmannii</i> <i>P. flexilis</i> <i>P. contorta</i> <i>P. menziesii</i> <i>Pinus albicaulis</i>	<i>C. pseudoalpina</i> <i>Clematis tenuiloba</i>	Pfister et al. 1977
<i>Abies lasiocarpa</i> / <i>Juniperus communis</i> H.T.	Mountains of central Idaho, northwestern Wyoming, Utah, northern Arizona, and New Mexico	Warm to cold dry	Climax or co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>A. concolor</i> <i>P. pungens</i> (UT) <i>Pinus longaeva</i> (UT)	<i>J. communis</i> <i>Pyrola secunda</i> <i>Shepherdia canadensis</i> <i>A. cordifolia</i> <i>S. oreophilus</i> <i>Rosa woodsii</i>	Mauk and Henderson 1984 Moir and Ludwig 1979 Steele et al. 1981, 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Linnaea borealis</i> H.T., <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> IL. <i>borealis</i> P.C. (CO)	Mountains of Montana, central and southern Idaho, northwestern Wyoming, and central Colorado	Cool moist to well-drained	Climax or co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>L. occidentalis</i> <i>Pinus ponderosa</i>	<i>L. borealis</i> <i>V. scoparium</i> <i>Calamagrostis rubescens</i> <i>A. cordifolia</i>	Pfister et al. 1977 Steele et al. 1981, 1983 Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Menziesia ferruginea</i> H.T.	Mountains of southeastern Washington, eastern Oregon, Montana, Idaho, and northwestern Wyoming	Cool moist	Climax	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>Pinus monticola</i> <i>P. albicaulis</i>	<i>M. ferruginea</i> <i>Rhododendron albiglorum</i> <i>Ledum glandulosum</i> <i>V. globulare</i> <i>Arnica latifolia</i> <i>X. tenax</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977 Steele et al. 1981 1983

Table A8.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Oplopanax horridum</i> H.T.	Mountains of northern Montana	Cool moist- wet	Co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. monticola</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>O. horridum</i> <i>Taxus brevifolia</i>	Pfister et al. 1977
<i>Abies lasiocarpa</i> / <i>Pachistima myrsinites</i> H.T., <i>A. lasiocarpa</i> - <i>Picea</i> <i>engelmannii</i> / <i>P. myrsinites</i> H.T. (CO)	Mountains of Montana and Idaho south to southern Colo- rado	Warm dry to well- drained	Climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. monticola</i> <i>L. occidentalis</i> <i>P. tremuloides</i>	<i>P. myrsinites</i> <i>Clintonia uniflora</i> <i>Galium triflorum</i> <i>C. geyseri</i> <i>Erigeron</i> spp.	Daubenmire and Daubenmire 1968 Hess and Wasser 1982 Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of eastern Idaho, northwestern Wyoming, north- ern and central Utah	Warm moist	Climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>A. concolor</i>	<i>P. malvaceus</i> <i>Symphoricarpos</i> <i>albus</i> <i>Spiraea betulifolia</i> <i>Amelanchier alnifolia</i> <i>Sorbus scopulina</i>	Mauk and Hender- son 1984 Steel et al. 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Ribes montigenum</i> H.T.	Mountains of southern Mon- tana, Idaho, Utah, and northwestern Wyoming	Cool dry	Climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>R. montigenum</i> <i>A. latifolia</i> <i>T. fendleri</i> <i>Antennaria</i> <i>microphylla</i> <i>Martensia arizonica</i>	Mauk and Hender- son 1983 Pfister 1972 Pfister et al. 1977 Steel et al. 1981, 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Rubus parviflorus</i> H.T.	Mimbres and Mogollon Moun- tains, New Mex- ico; San Juan Mountains, Colo- rado	Warm moist	Co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> (NM only) <i>A. concolor</i> (NM only) <i>P. tremuloides</i>	<i>R. parviflorus</i> <i>Vaccinium myrtillus</i> <i>A. glabrum</i> <i>P. myrsinites</i>	DeVilce et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Salix pseudolapponum</i> H.T., <i>A. lasiocarpa</i> - <i>Picea</i> <i>engelmannii</i> / <i>S. glauca</i> H.T.	High mountains of Colorado	Cold wet	Co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. flexilis</i>	<i>S. pseudolapponum</i> <i>V. myrtillus</i> <i>Polemonium pulcher- rimum</i> <i>Acomastylis rossii</i>	Hess 1981 Hess and Wasser 1982 Komarkova 1984
<i>Abies lasiocarpa</i> / <i>Shepherdia canadensis</i> H.T. (WY), <i>A. lasiocarpa</i> - <i>Picea</i> <i>engelmannii</i> / <i>S. canadensis</i> P.C. (CO)	Bighorn Moun- tains, Wyoming; mountains of central Colorado	Cool-warm dry	Co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>P. menziesii</i>	<i>S. canadensis</i> <i>V. scoparium</i>	Hoffman and Alex- ander 1976 Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Spiraea betulifolia</i> H.T.	Mountains of central and southern Idaho, and northwestern Wyoming	Warm dry	Climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. albicaulis</i>	<i>S. betulifolia</i> <i>P. myrsinites</i> <i>C. rubescens</i>	Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Symphoricarpos albus</i> H.T.	Mountains of southeastern Idaho and north- western Wyoming	Warm well- drained	Climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>S. albus</i> <i>A. alnifolia</i> <i>C. rubescens</i>	Steele et al. 1983

Table A8.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Vaccinium caespitosum</i> H.T.	Mountains of south-central Montana, central Idaho, northern and central Utah	Cool well- drained	Climax	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>V. caespitosum</i> <i>L. borealis</i> <i>C. rubescens</i> <i>V. scoparium</i> <i>A. cordifolia</i>	Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Vaccinium globulare</i> H.T.	Mountains of south-central Montana, central and southern Idaho, northern Utah, and north- western Wyoming	Cool to moist well- drained	Climax	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>V. globulare</i> <i>V. scoparium</i> <i>Lonicera utahensis</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984 Pfister et al. 1977 Steel et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Vaccinium</i> <i>membranaceum</i> H.T.	Mountains of central Utah	Warm dry to well- drained	Climax	<i>P. engelmannii</i> <i>P. tremuloides</i>	<i>V. membranaceum</i> <i>P. myrsinites</i> <i>Carex rossii</i>	Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Vaccinium myrtillus</i> H.T. [<i>A. lasiocarpa</i> / <i>V. myrtillus</i> - <i>Linnaea borealis</i> H.T.] [<i>A. lasiocarpa</i> / <i>V. myrtillus</i> - <i>Rubus parviflorus</i> H.T.] [<i>A. lasiocarpa</i> / <i>Vaccinium</i> <i>scoparium</i> - <i>L. borealis</i> H.T.]	Mogollon Plateau, Arizona; moun- tains of northern New Mexico and southern Colo- rado; LaSal Moun- tains, Utah	Cool moist to well- drained	Climax (AZ) co-climax with <i>P. engelmannii</i> (NM,CO,UT)	<i>P. engelmannii</i> <i>Pinus aristata</i> <i>P. tremuloides</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. flexilis</i> <i>P. pungens</i> <i>Pinus strobi-</i> <i>formis</i>	<i>V. myrtillus</i> <i>Disporum</i> <i>trachycarpum</i> <i>Calamagrostis</i> <i>canadensis</i> <i>Polemonium flavum</i> <i>V. scoparium</i> <i>L. borealis</i> <i>R. parviflorus</i> <i>Erigeron eximius</i> (<i>E. superbus</i>)	Alexander et al. 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Vaccinium scoparium</i> H.T., <i>A. lasiocarpa</i> - <i>Picea</i> <i>engelmannii</i> / <i>V. scoparium</i> H.T. [<i>P. engelmannii</i> / <i>V. scoparium</i> H.T.]	Mountains of Montana and Idaho south to Arizona and New Mexico	Cool dry	Climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>P. tremuloides</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>V. scoparium</i> <i>C. rubescens</i> <i>V. myrtillus</i> <i>A. cordifolia</i> <i>C. geyeri</i> <i>Erigeron superbus</i> (<i>E. eximius</i>) <i>L. borealis</i> <i>P. myrsinites</i> <i>Phyllodoce empetri-</i> <i>formis</i>	Daubenmire and Daubenmire 1968 Hess 1981 Hess and Wasser 1982 Hoffman and Alex- ander 1976, 1980, 1983 Komarkova 1984 Mauk and Hender- son 1984 Moir and Ludwig 1979 Pfister 1972 Pfister et al. 1977 Steele et al. 1981, 1983 Steen and Dix 1974 Wirsing and Alex- ander 1975
<i>A. lasiocarpa</i> - <i>Pinus albicaulis</i> / <i>Vaccinium scoparium</i> H.T.	Mountains of Montana east of Continental Divide	Cool dry	Co-climax with <i>P. albicaulis</i>	<i>P. albicaulis</i> <i>P. engelmannii</i> <i>P. contorta</i>	<i>V. scoparium</i> <i>X. tenax</i> <i>C. geyeri</i> <i>A. latifolia</i>	Pfister et al. 1977
<i>Abies lasiocarpa</i> / <i>Xerophyllum tenax</i> H.T.	Mountains of northern Idaho, eastern Washington, Idaho, Montana and northwestern Wyoming	Warm dry	Climax	<i>P. engelmannii</i> <i>P. albicaulis</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. ponderosa</i>	<i>X. tenax</i> <i>V. membranaceum</i> <i>V. scoparium</i> <i>V. globulare</i> <i>Luzula hitchcockii</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977 Steele et al. 1981, 1983

Table A8.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Calamagrostis</i> <i>canadensis</i> H.T., <i>A. lasiocarpa</i> - <i>Picea</i> <i>engelmannii</i> / <i>C. canadensis</i> H.T. [<i>P. engelmannii</i> / <i>C. canadensis</i> H.T.]	Mountains of central Montana, Idaho, north- western Wyom- ing, northern Utah, north- central and western Colorado	Cool wet	Climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>P. menziesii</i> (ID) <i>P. pungens</i> (UT)	<i>C. canadensis</i> <i>G. triflorum</i> <i>V. caespitosum</i> <i>L. glandulosum</i> <i>Senecio triangularis</i>	Cooper et al. 1983 Hess 1981 Komarkova 1984 Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Calamagrostis</i> <i>rubescens</i> H.T.	Mountains of Montana east of Continental Divide, central and southern Idaho, northern Utah, and north- western Wyoming	Warm dry	Climax	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>C. rubescens</i> <i>O. chilensis</i> <i>T. occidentale</i> <i>C. geyeri</i> <i>A. cordifolia</i> <i>P. myrsinites</i>	Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Luzula hitchcockii</i> H.T.	Mountains of Montana west of Continental Divide, Idaho, and western Wyoming	Cool well- drained	Climax	<i>P. engelmannii</i> <i>P. albicaulis</i> <i>P. contorta</i>	<i>L. hitchcockii</i> <i>A. latifolia</i> <i>X. tenax</i> <i>A. cordifolia</i> <i>M. ferruginea</i> <i>V. scoparium</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Carex geyeri</i> H.T., <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>C. geyeri</i> H.T. [<i>P. engelmannii</i> / <i>C. geyeri</i> H.T.]	Mountains of central Montana, central Idaho, southern Utah, Wyoming, and north-central and western Colorado	Warm to cool dry	Climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> (MT,ID) <i>P. albicaulis</i> <i>P. tremuloides</i>	<i>C. geyeri</i> <i>S. oreophilus</i> <i>A. cordifolia</i> <i>Lupinus argenteus</i> <i>B. repens</i> <i>Lathyrus lanszwertii</i>	Hess 1981 Hess and Wasser 1982 Hoffman and Alex- ander 1976, 1983 Komarkova 1984 Pfister et al. 1977 Steele et al. 1981, 1983 Steen and Dix 1974 Wirsing and Alex- ander 1975 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Carex rossii</i> H.T.	Mountains of southern Idaho, Utah, and north- western Wyoming	Warm dry	Climax	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>P. menziesii</i>	<i>C. rossii</i> <i>A. cordifolia</i> <i>Astragalus miser</i> <i>R. woodsii</i>	Steele et al. 1983 Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Pinus albicaulis</i> H.T.	Mountains of northern Idaho and eastern Washington	Cool dry	Co-climax with <i>P. albicaulis</i>	<i>P. albicaulis</i>	<i>V. scoparium</i> <i>X. tenax</i> <i>C. geyeri</i> <i>Luzula glabrata</i>	Daubenmire and Daubenmire 1968
<i>Abies lasiocarpa</i> / <i>Aconitum</i> <i>columbianum</i> H.T.	Mountains of central and southern Utah	Cool moist	Climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i> <i>A. concolor</i>	<i>A. columbianum</i> <i>Actaea rubra</i> <i>A. cordifolia</i> <i>B. ciliatus</i>	Youngblood 1984
<i>Abies lasiocarpa</i> / <i>Actaea rubra</i> H.T.	Mountains of central Idaho, northern Utah, and northwestern Wyoming	Warm moist	Co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. pungens</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>A. rubra</i> <i>O. chilensis</i> <i>L. utahensis</i> <i>V. globulare</i>	Mauk and Hender- son 1984 Steele et al. 1983

Table A8.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Arnica cordifolia</i> H.T.	Mountains of Montana east of Continental Divide, central Idaho, north- western and north-central Wyoming, and western Colorado	Cool well- drained	Climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>A. cordifolia</i> <i>P. secunda</i> <i>A. miser</i> <i>Fragaria virginiana</i>	Hoffman and Alex- ander 1976 Komarkova 1984 Pfister et al. 1977 Steele et al. 1981, 1983
<i>Abies lasiocarpa</i> / <i>Arnica latifolia</i> H.T.	Mountains of southern Idaho, northern Utah, and northwestern Wyoming	Cool dry	Co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>P. menziesii</i> <i>P. albicaulis</i>	<i>A. latifolia</i> <i>Aster engelmannii</i> <i>Pedicularis</i> <i>racemosa</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Caltha biflora</i> H.T.	Mountains of central Idaho	Cool wet	Co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i>	<i>C. biflora</i> <i>Lonicera involucrata</i> <i>Pedicularis</i> <i>bracteosa</i> <i>Dodecatheon jeffreyi</i>	Steele et al. 1981
<i>Abies lasiocarpa</i> - <i>Picea engelmannii</i> / <i>Cardamine cordifolia</i> P.C. [<i>A. lasiocarpa</i> / <i>Mertensia ciliata</i> H.T.]	Mountains of central and southern Colo- rado	Cool wet	Co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. tremuloides</i>	<i>C. cordifolia</i> <i>M. ciliata</i> <i>Mitella pentandra</i> <i>Carex bella</i>	DeVelice et al. 1984 Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northwestern Montana, north- ern and central Idaho	Warm moist to dry	Climax	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>P. monticola</i> <i>Abies grandis</i> <i>P. ponderosa</i>	<i>C. uniflora</i> <i>M. ferruginea</i> <i>V. caespitosum</i> <i>Aralia nudicaulis</i> <i>X. tenax</i>	Cooper et al. 1983 Pfister et al. 1977 Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Coptis occidentalis</i> H.T.	Mountains of central and north- ern Idaho	Warm moist	Climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>L. occidentalis</i> <i>A. grandis</i>	<i>C. occidentalis</i> <i>X. tenax</i> <i>V. globulare</i> <i>M. ferruginea</i>	Cooper et al. 1983 Steele et al. 1981
<i>Abies lasiocarpa</i> / <i>Erigeron superbis</i> (<i>E. eximius</i>) H.T.	Mountains of southwestern Colorado, north- ern New Mexico, and Arizona	Cool dry	Co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>A. concolor</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>P. tremuloides</i> <i>P. pungens</i>	<i>E. superbis</i> (<i>E. eximius</i>) <i>Geranium</i> <i>richardsonii</i> <i>Lathyrus arizonicus</i> <i>L. involucrata</i> <i>A. cordifolia</i> <i>B. repens</i>	Alexander et al. 1984c DeVelice et al. 1984 Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Galium triflorum</i> H.T.	Mountains of northern Montana	Warm moist	Climax	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>G. triflorum</i> <i>A. rubra</i> <i>Streptopus amplexi- folius</i>	Pfister et al. 1977

Table A8.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Lathyrus arizonicus</i> H.T. [<i>A. lasiocarpa</i> - <i>Pinus strobiformis</i> / <i>L. arizonicus</i> H.T.]	San Francisco Peaks, Arizona; Mogollon Moun- tains, New Mex- ico	Cool dry	Climax	<i>P. menziesii</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>L. arizonicus</i> <i>G. richardsonii</i> <i>Smilacina stellata</i> <i>A. glabrum</i> <i>S. oreophilus</i> <i>Vicia americana</i>	Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Abies lasiocarpa</i> - <i>Picea engelmannii</i> / <i>Lupinus argenteus</i> P.C.	Mountains of central and southern Colo- rado	Warm well- drained	Co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> (long-lived seral)	<i>L. argenteus</i> <i>V. scoparium</i>	Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Osmorhiza chilensis</i> H.T.	Mountains of southern Idaho and northern Utah	Warm moist to well- drained	Climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>O. chilensis</i> <i>C. rossii</i> <i>B. repens</i> <i>P. myrsinites</i>	Mauk and Henderson 1984 Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Pedicularis racemosa</i> H.T.	Mountains of southeastern Idaho, north- western Wyo- ming, and north- ern Utah	Warm dry	Climax	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>P. racemosa</i> <i>A. cordifolia</i> <i>S. oreophilus</i>	Mauk and Hender- son 1984 Steele et al. 1983
<i>Abies lasiocarpa</i> / <i>Polemonium delicatum</i> H.T., <i>A. lasiocarpa</i> - <i>Picea</i> <i>engelmannii</i> / <i>P. delicatum</i> P.C.	Mountains of Colorado	Cool dry	Co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>P. delicatum</i> (<i>P. pulcherrimum</i>) <i>Osmorhiza obtusa</i> <i>Vaccinium</i> spp.	Komarkova 1984 Steen and Dix 1974
<i>Abies lasiocarpa</i> / <i>Saxifraga bronchialis</i> H.T. (Scree Forest)	Mogollon Moun- tains, Sangre de Cristo Mountains, northern New Mexico and southern Colo- rado	Warm dry	Climax	<i>P. menziesii</i> <i>P. strobiformis</i>	<i>S. bronchialis</i> <i>S. oreophilus</i> <i>J. communis</i> <i>Holodiscus dumosus</i> <i>L. involucrata</i> <i>Erigeron vetensis</i>	DeVelice et al. 1984 Fitzhugh et al. 1984
<i>Abies lasiocarpa</i> / <i>Senecio</i> <i>sanguisorboides</i> H.T.	Sacramento Mountains, south- ern New Mexico	Cool dry to well- drained	Co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>S. sanguisorboides</i> <i>R. montigenum</i> <i>Ribes wolfii</i>	Alexander et al. 1984a Moir and Ludwig 1979
<i>Abies lasiocarpa</i> / <i>Senecio triangularis</i> H.T., <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / <i>S. triangularis</i> H.T. [<i>P. engelmannii</i> / <i>S. triangularis</i> H.T.]	Mountains of north-central and western Colorado	Cool wet stream bot- toms	Co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i>	<i>S. triangularis</i> <i>C. cordifolia</i> <i>Equisetum arvense</i> <i>M. ciliata</i>	Hess 1981 Komarkova 1984
<i>Abies lasiocarpa</i> / <i>Streptopus</i> <i>amplexifolius</i> H.T.	Mountains of Idaho and north- western Utah	Warm moist to wet	Climax	<i>P. engelmannii</i> <i>P. contorta</i>	<i>S. amplexifolius</i> <i>S. triangularis</i> <i>Ligusticum canbyi</i> <i>Ribes lacustre</i>	Cooper et al. 1983 Steele et al. 1981, 1983

Table A8.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal tree associates	Principal understory species	Authority
<i>Abies lasiocarpa</i> / <i>Thalictrum occidentale</i> H.T.	Mountains of southeastern Idaho and north- western Wyoming	Warm well- drained	Climax	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>T. occidentale</i> <i>O. chilensis</i> <i>A. cordifolia</i>	Steele et al. 1983
<i>Abies lasiocarpa</i> / Moss spp. H.T., <i>A. lasiocarpa</i> - <i>Picea engelmannii</i> / Moss spp. P.C.	Mountains of central and southwestern Colorado and northern New Mexico	Cool dry to well- drained	Co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. aristata</i> <i>P. tremuloides</i> <i>P. contorta</i> (CO) <i>P. menziesii</i> (NM)	Moss spp. <i>V. caespitosum</i> <i>Rosa</i> spp.	DeVelice et al. 1984 Komarkova 1984 Steen and Dix 1974
<i>Picea engelmannii</i> series						
<i>Picea engelmannii</i> / <i>Acer glabrum</i> H.T.	Sacramento Mountains, New Mexico; Chiricahua Moun- tains, Arizona	Warm moist	Minor climax to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>A. glabrum</i> <i>B. ciliatus</i> <i>Viola canadensis</i> <i>S. stellata</i>	Alexander et al. 1984a Moir and Ludwig 1979
<i>Picea engelmannii</i> / <i>Physocarpus malvaceus</i> H.T.	Mountains of south-central Montana	Warm moist	Minor climax to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>P. malvaceus</i> <i>S. albus</i> <i>S. betulifolia</i>	Pfister et al. 1977
<i>Picea engelmannii</i> / <i>Vaccinium myrtillus</i> H.T. [<i>P. engelmannii</i> / <i>V. myrtillus</i> - <i>Polemonium</i> <i>pulcherrimum</i> H.T.] [<i>P. engelmannii</i> / <i>Vaccinium scoparium</i> - <i>P. delicatum</i> H.T.]	Sangre de Cristo Mountains, south- ern Colorado and northern New Mexico	Cool dry	Minor climax to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. aristata</i>	<i>V. myrtillus</i> <i>P. delicatum</i> (<i>P. pulcherrimum</i>) <i>Senecio</i> spp. <i>Deschampsia</i> <i>caespitosa</i> <i>Poa reflexa</i>	DeVelice et al. 1984 Moir and Ludwig 1979
<i>Picea engelmannii</i> / <i>Vaccinium scoparium</i> H.T.	Mountains of northwestern Wyoming	Cool dry	Minor climax to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. flexilis</i> <i>P. albicaulis</i>	<i>V. scoparium</i> <i>A. cordifolia</i> <i>Antennaria</i> spp. <i>Lupinus</i> spp.	Steele et al. 1983
<i>Picea engelmannii</i> / <i>Elymus triticoides</i> H.T.	Capitan Moun- tains, New Mex- ico	Cool dry to well- drained	Minor climax to or co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>E. triticoides</i> <i>A. glabrum</i> <i>Jamesia americana</i>	Alexander et al. 1984a Moir and Ludwig 1979
<i>Picea engelmannii</i> / <i>Carex disperma</i> H.T.	Mountains of central and southern Idaho, and northwestern Wyoming	Cool moist	Minor climax to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. pungens</i>	<i>C. disperma</i> <i>P. secunda</i> <i>G. triflorum</i>	Steele et al. 1981, 1983
<i>Picea engelmannii</i> / <i>Caltha leptosepala</i> H.T.	Mountains of northwestern Wyoming and east-central Idaho	Warm moist	Minor climax to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. albicaulis</i>	<i>C. leptosepala</i> <i>Trollius taxus</i>	Steele et al. 1983

Table A8.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal tree associates	Principal understory species	Authority
<i>Picea engelmannii</i> / <i>Equisetum arvense</i> H.T.	Mountains of southern Mon- tana, north- western Wyo- ming, central Idaho, and north- ern Utah	Warm to cool, wet	Minor climax to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. pungens</i>	<i>E. arvense</i> <i>S. amplexifolius</i> <i>S. triangularis</i> <i>Luzula parviflora</i>	Mauk and Hender- son 1984 Steele et al. 1981, 1983
<i>Picea engelmannii</i> / <i>Galium trifolium</i> H.T.	Mountains of central Idaho and northwestern Wyoming	Cool moist	Minor climax to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>A. menziesii</i> <i>P. pungens</i>	<i>G. trifolium</i> <i>A. rubra</i> <i>S. stellata</i> <i>S. amplexifolius</i>	Steele et al. 1981, 1983
<i>Picea engelmannii</i> / <i>Saxifraga bronchialis</i> H.T. (Scree Forest)	Mountains of northern New Mexico and southern Colo- rado	Warm dry	Minor climax to <i>P. engelmannii</i>	<i>P. engelmannii</i>	<i>S. bronchialis</i> <i>J. communis</i>	DeVelice et al. 1984
<i>Picea engelmannii</i> / <i>Senecio cardamine</i> H.T.	Blue Mountains, Arizona	Cool moist	Seral or minor climax to <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. pungens</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>A. concolor</i> <i>P. tremuloides</i>	<i>S. cardamine</i> <i>Fragaria ovalis</i> <i>G. richardsonii</i> <i>V. canadensis</i>	Fitzhugh et al. 1984
<i>Picea engelmannii</i> / <i>Trifolium dasyphyllum</i> H.T.	Mountains of north-central Colorado	Cold moist	Minor climax to or co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>T. dasyphyllum</i> <i>Pyrola chlorantha</i> <i>Sedum lanceolatum</i>	Hess 1981
<i>Picea engelmannii</i> / Moss spp. H.T.	Mountains of southwestern Colorado and northern New Mexico	Cool moist to well- drained	Co-climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. aristata</i> <i>P. tremuloides</i> <i>P. menziesii</i>	Moss spp. <i>Ribes</i> spp. <i>Vaccinium</i> spp. <i>L. arizonicus</i>	Alexander et al. 1984c Fitzhugh et al. 1984 Moir and Ludwig 1979
<i>Picea pungens</i> series						
<i>Picea pungens</i> / <i>Amelanchier alnifolia</i> H.T.	Mountains of western and central Colorado	Warm moist	Minor climax to <i>P. pungens</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>Populus angusti- folia</i>	<i>A. alnifolia</i> <i>Cornus stolonifera</i> <i>C. geyeri</i> <i>Swida sericea</i>	Hess and Wasser 1982 Komarkova 1984
<i>Picea pungens</i> / <i>Linnaea borealis</i> H.T. [<i>P. pungens</i> - <i>Pseudotsuga menziesii</i> / <i>L. borealis</i> H.T.]	Mountains of northern New Mexico and southern Colo- rado	Cool well- drained	Minor climax to <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>A. concolor</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>L. borealis</i> <i>P. myrsinites</i> <i>V. myrtillus</i>	DeVelice et al. 1984 Moir and Ludwig 1979

Table A8.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal tree associates	Principal understory species	Authority
<i>Picea pungens</i> / <i>Erigeron eximius</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> / <i>E. superbus</i> H.T.]	White Mountains, Arizona	Cool dry	Minor climax to <i>P. engelmannii</i> <i>P. pungens</i>	<i>P. pungens</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>P. tremuloides</i> <i>P. flexilis</i> <i>P. concolor</i>	<i>E. superbus</i> (<i>E. eximius</i>) <i>Festuca arizonica</i> <i>Carex foenea</i> <i>F. virginiana</i>	Moir and Ludwig 1979
<i>Picea pungens</i> / <i>Fragaria ovalis</i> H.T.	Mountains of Arizona and New Mexico	Cool moist	Minor climax to <i>P. pungens</i> <i>P. menziesii</i>	<i>P. pungens</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>A. concolor</i>	<i>F. ovalis</i> <i>Senecio cardamine</i> <i>E. eximius</i> (<i>E. superbus</i>) <i>Achillea millefolium</i> <i>C. foenea</i> <i>F. arizonica</i>	Fitzhugh et al. 1984
<i>Picea pungens</i> / <i>Senecio cardamine</i> H.T. [<i>P. pungens</i> - <i>Picea engelmannii</i> / <i>S. cardamine</i> H.T.]	White Mountains, Arizona	Cool moist	Co-climax with or minor climax to <i>P. engelmannii</i> <i>P. pungens</i>	<i>P. pungens</i> <i>P. engelmannii</i> <i>P. ponderosa</i> <i>P. menziesii</i> <i>P. strobiformis</i> <i>P. tremuloides</i> <i>A. concolor</i>	<i>S. cardamine</i> <i>Pteridium aquilinum</i> <i>Helenium hoopesii</i> <i>V. canadensis</i>	Moir and Ludwig 1979
<i>Pinus contorta</i> series and other <i>P. contorta</i> dominated vegetation						
<i>Pinus contorta</i> / <i>Arctostaphylos uva-ursi</i> H.T. (UT); P.C. (CO)	Uinta Mountains, Utah; mountains of north-central Colorado	Warm dry	Minor climax to <i>P. contorta</i> (UT). Ultimate climax unknown (CO). Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>A. uva-ursi</i> <i>B. repens</i> <i>Sitanion hystris</i>	Mauk and Hender- son 1984 Steen and Dix 1974
<i>Pinus contorta</i> / <i>Juniperus communis</i> H.T. (CO); C.T. (ID,WY)	Mountains of eastern Idaho, northwestern Wyoming, and central Colorado	Warm dry	Minor climax to <i>P. contorta</i> (CO). Ultimate climax unknown (ID,WY). Prob- ably co-climax with <i>P. engelmannii</i> <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. albicaulis</i> <i>P. contorta</i>	<i>J. communis</i> <i>A. uva-ursi</i> <i>S. canadensis</i> <i>A. cordifolia</i>	Hess 1981 Steele et al. 1983
<i>Pinus contorta</i> / <i>Linnaea borealis</i> C.T. (MT,WY); P.C. (CO)	Mountains of Montana east of Continental Divide, north- western Wyo- ming, and north- central Colorado	Cool moist to well- drained	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>L. borealis</i> <i>V. scoparium</i> <i>V. globulare</i> <i>A. cordifolia</i> <i>C. rubescens</i>	Pfister et al. 1977 Steele et al. 1983 Steen and Dix 1974
<i>Pinus contorta</i> / <i>Pachistima myrsinites</i> P.C.	Mountains of north-central Colorado	Warm dry to well- drained	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. contorta</i>	<i>P. myrsinites</i> <i>V. scoparium</i> <i>J. communis</i> <i>L. borealis</i>	Steen and Dix 1974

Table A8.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus contorta</i> / <i>Purshia tridentata</i> H.T.	Mountains of western Montana	Cool-warm dry to well- drained	Minor climax to <i>P. contorta</i>	<i>P. contorta</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. tremuloides</i>	<i>P. tridentata</i> <i>A. uva-ursi</i> <i>C. rossii</i> <i>Lupinus</i> spp.	Pfister et al. 1977
<i>Pinus contorta</i> / <i>Shepherdia canadensis</i> C.T. (ID,WY); P.C. (CO)	Mountains of southeastern Idaho, north- western Wyo- ming, and central Colorado	Cool-warm dry to well- drained	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>S. canadensis</i> <i>A. cordifolia</i> <i>J. communis</i> <i>L. borealis</i> <i>A. uva-ursi</i>	Steele et al. 1983 Steen and Dix 1974
<i>Pinus contorta</i> / <i>Spiraea betulifolia</i> C.T.	Mountains of eastern Idaho and northwestern Wyoming	Warm dry	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>S. betulifolia</i> <i>C. rubescens</i> <i>C. geyeri</i>	Steele et al. 1983
<i>Pinus contorta</i> / <i>Vaccinium caespitosum</i> C.T.	Mountains of south-central Montana, Idaho, and northern Utah	Cool well- drained	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>V. caespitosum</i> <i>V. scoparium</i> <i>Festuca ovina</i> <i>L. borealis</i>	Cooper et al. 1983 Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981
<i>Pinus contorta</i> / <i>Vaccinium globulare</i> C.T.	Mountains of southern Idaho, northwestern Wyoming, and northern Utah	Cool well- drained	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>V. globulare</i> <i>L. utahensis</i> <i>V. scoparium</i> <i>C. rubescens</i>	Steele et al. 1983
<i>Pinus contorta</i> / <i>Vaccinium scoparium</i> C.T.; P.C. (CO)	Mountains of Montana, Idaho, northwestern Wyoming, and northern Utah; mountains of southern Wyo- ming and central Colorado	Cool to cold dry	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i> <i>P. menziesii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>P. flexilis</i> <i>A. grandis</i> <i>Tsuga hetero- phylla</i> <i>L. occidentalis</i>	<i>V. scoparium</i> <i>C. rubescens</i> <i>A. cordifolia</i> <i>L. argenteus</i> <i>B. repens</i> <i>C. geyeri</i>	Cooper et al. 1983 Mauk and Hender- son 1984 Pfister et al. 1977 Steele et al. 1981, 1983 Steen and Dix 1974 Wirsing and Alex- ander 1975
<i>Pinus contorta</i> / <i>Xerophyllum tenax</i> C.T.	Mountains of northern Idaho	Warm dry	Ultimate climax unknown. <i>P. contorta</i> may be climax	<i>P. contorta</i> <i>P. engelmannii</i> <i>P. menziesii</i>	<i>X. tenax</i> <i>Vaccinium</i> spp.	Cooper et al. 1983
<i>Pinus contorta</i> / <i>Calamagrostis</i> <i>canadensis</i> C.T.	Uinta Mountains, Utah	Cool moist	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i>	<i>C. canadensis</i> <i>A. cordifolia</i> <i>J. communis</i> <i>Poa nervosa</i>	Mauk and Hender- son 1984

Table A8.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus contorta</i> / <i>Calamagrostis</i> <i>rubescens</i> C.T.	Mountains of Montana, Idaho, northern Utah, and northwestern Wyoming	Warm dry	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>C. rubescens</i> <i>V. scoparium</i> <i>C. geyseri</i> <i>A. cordifolia</i> <i>A. uva-ursi</i>	Pfister et al. 1977 Steele et al. 1983
<i>Pinus contorta</i> / <i>Carex geyseri</i> C.T. (ID,WY); P.C. (CO)	Mountains of central Idaho, northwestern and southern Wyo- ming, and north- central Colorado	Cool dry	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. albicaulis</i> <i>P. flexilis</i> <i>P. tremuloides</i>	<i>C. geyseri</i> <i>S. oreophilus</i> <i>A. cordifolia</i> <i>L. argenteus</i> <i>B. repens</i> <i>J. communis</i>	Hess 1981 Hess and Wasser 1982 Steele et al. 1981, 1983 Steen and Dix 1974 Wiring and Alex- ander 1975
<i>Pinus contorta</i> / <i>Carex rossii</i> C.T.	Mountains of northwestern Wyoming	Warm dry	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. albicaulis</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>C. rossii</i> <i>L. argenteus</i> <i>P. nervosa</i>	Steele et al. 1983
<i>Pinus contorta</i> / <i>Arnica cordifolia</i> C.T.	Mountains of eastern Idaho and northwestern Wyoming	Cool dry	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>P. flexilis</i>	<i>A. cordifolia</i> <i>Antennaria racemosa</i> <i>A. miser</i> <i>P. secunda</i>	Steele et al. 1983
<i>Pinus contorta</i> / <i>Lupinus argenteus</i> P.C.	Mountains of central and southern Colo- rado	Warm dry to well- drained	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. contorta</i>	<i>L. argenteus</i>	Steen and Dix 1974
<i>Pinus contorta</i> / Lichen spp. P.C.	Mountains of central Colorado	Hot dry	Ultimate climax unknown. Probably co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i>	Lichen spp.	Steen and Dix 1974
<i>Populus tremuloides</i> series and other <i>P. tremuloides</i> dominated vegetation						
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Berberis repens</i> C.T., <i>P. tremuloides</i> / <i>B. repens</i> C.T.	Mountains of western Wyoming	Warm to cool. Well- drained	Climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>B. repens</i> <i>S. albus</i> <i>P. myrsinites</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Pachistima myrsinites</i> C.T. (ID); P.C. (CO)	Mountains of southeastern Idaho, central and southwestern Colorado	Warm dry	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>P. menziesii</i>	<i>P. myrsinites</i> <i>V. scoparium</i> <i>C. geyseri</i> <i>C. rubescens</i>	Mueggler and Campbell 1982 Steen and Dix 1974

Table A8.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal tree associates	Principal understory species	Authority
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Prunus virginiana</i> C.T., <i>P. tremuloides</i> / <i>P. virginiana</i> C.T.	Mountains of western Wyoming	Warm dry	Climax or co- climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>P. virginiana</i> <i>B. repens</i> <i>S. oreophilus</i> <i>R. woodsii</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Shepherdia</i> <i>canadensis</i> C.T., <i>P. tremuloides</i> / <i>S. canadensis</i> C.T.	Mountains of western Wyoming	Cool-dry to well- drained	Climax	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i> <i>P. flexilis</i>	<i>S. canadensis</i> <i>Geranium</i> <i>viscosissimum</i> <i>A. cordifolia</i> <i>R. woodsii</i> <i>T. fendleri</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Symphoricarpos</i> <i>oreophilus</i> C.T., <i>P. tremuloides</i> / <i>S. oreophilus</i> C.T.	Mountains of southeastern Idaho, northern Utah, and western Wyoming	Warm well- drained	Ultimate climax unknown. Probably climax or co- climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>A. concolor</i> <i>P. tremuloides</i>	<i>S. oreophilus</i> <i>P. virginiana</i> <i>B. repens</i> <i>Elymus glaucus</i> <i>C. rubescens</i>	Mauk and Hender- son 1984 Mueggler and Campbell 1982 Steele et al. 1983 Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Pseudotsuga menziesii</i> / <i>Symphoricarpos</i> <i>oreophilus</i> C.T., <i>P. tremuloides</i> / <i>S. oreophilus</i> C.T.	Mountains of southeastern Idaho	Warm dry	Ultimate climax unknown. Probably minor climax to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>S. oreophilus</i> <i>C. rubescens</i> <i>Poa pratensis</i> <i>C. geeyeri</i>	Mueggler and Campbell 1982
<i>Populus tremuloides</i> - <i>Pinus contorta</i> / <i>Calamagrostis</i> <i>rubescens</i> C.T., <i>P. tremuloides</i> / <i>C. rubescens</i> C.T.	Mountains of southeastern Idaho	Warm dry	Ultimate climax unknown. Probably climax or co- climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>C. rubescens</i> <i>S. oreophilus</i> <i>P. myrsinites</i> <i>L. argenteus</i> <i>T. fendleri</i> <i>G. viscosissimum</i>	Mueggler and Campbell 1982
<i>Populus tremuloides</i> / <i>Elymus glaucus</i> P.C.	Mountains of central and southwestern Colorado	Warm moist to well- drained	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>E. glaucus</i> <i>A. alnifolia</i> <i>Symphoricarpos</i> spp. <i>Ligusticum porteri</i>	Steen and Dix 1974
<i>Populus tremuloides</i> / <i>Festuca thurberi</i> P.C.	Mountains of southwestern Colorado	Warm dry	Ultimate climax unknown. Probably climax or co- climax with <i>P. engelmannii</i>	<i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>F. thurberi</i> <i>B. repens</i> <i>S. oreophilus</i> <i>F. ovalis</i>	Steen and Dix 1974
<i>Populus tremuloides</i> / <i>Poa pratensis</i> C.T.	Mountains of southeastern Idaho	Warm dry	Ultimate climax unknown. Probably climax or co- climax with <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. tremuloides</i>	<i>P. pratensis</i> <i>C. rubescens</i> <i>T. fendleri</i> <i>P. nervosa</i> <i>L. argenteus</i>	Mueggler and Campbell 1982

Table A8.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal tree associates	Principal understory species	Authority
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Arnica cordifolia</i> C.T., <i>P. tremuloides</i> / <i>A. cordifolia</i> C.T.	Mountains of western Wyoming	Cool moist to well- drained	Climax	<i>P. contorta</i> <i>P. tremuloides</i>	<i>A. cordifolia</i> <i>S. oreophilus</i> <i>C. rossii</i> <i>O. chilensis</i> <i>P. nervosa</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Geranium</i> <i>viscosissimum</i> C.T.	Mountains of southeastern Idaho	Warm dry	Climax	<i>P. tremuloides</i>	<i>G. viscosissimum</i> <i>Symphoricarpos</i> spp. <i>L. argenteus</i> <i>T. fendleri</i>	Mueggler and Campbell 1982
<i>Populus tremuloides</i> / <i>Heracleum lanatum</i> C.T.	Mountains of western Wyoming	Warm moist	Climax	<i>P. engelmannii</i> <i>P. contorta</i> <i>P. tremuloides</i>	<i>H. lanatum</i> <i>P. bracteosa</i> <i>T. fendleri</i> <i>E. glaucus</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Ligusticum filicinum</i> C.T., <i>P. tremuloides</i> / <i>L. filicinum</i> C.T.	Mountains of western Wyoming	Cool moist to well- drained	Climax	<i>P. engelmannii</i> <i>P. tremuloides</i>	<i>L. filicinum</i> <i>T. fendleri</i> <i>G. viscosissimum</i> <i>Osmorhiza occiden- talis</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Pedicularis racemosa</i> C.T.	Mountains of western Wyoming	Cool moist	Climax	<i>P. engelmannii</i> <i>P. tremuloides</i>	<i>P. racemosa</i> <i>A. cordifolia</i> <i>S. oreophilus</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> / <i>Ranunculus</i> <i>alismaefolius</i> C.T.	Mountains of western Wyoming	Cool moist to wet	Climax	<i>P. engelmannii</i> <i>P. tremuloides</i>	<i>R. alismaefolius</i> <i>Carex microptera</i> <i>Trifolium longipes</i>	Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Rudbeckia</i> <i>occidentalis</i> C.T., <i>P. tremuloides</i> / <i>R. occidentalis</i> C.T.	Mountains of southeastern Idaho and western Wyoming	Cool moist to well- drained	Climax	<i>P. engelmannii</i> <i>P. tremuloides</i>	<i>R. occidentalis</i> <i>T. longipes</i> <i>Nemophila breviflora</i> <i>Melica spectabilis</i> <i>Symphoricarpos</i> spp.	Mueggler and Campbell 1982 Youngblood and Mueggler 1981
<i>Populus tremuloides</i> - <i>Abies lasiocarpa</i> / <i>Thalictrum fendleri</i> C.T.	Mountains of southeastern Idaho	Warm moist	Climax	<i>P. tremuloides</i> <i>P. flexilis</i>	<i>T. fendleri</i> <i>S. oreophilus</i> <i>G. viscosissimum</i> <i>O. chilensis</i>	Mueggler and Campbell 1982
<i>Pseudotsuga menziesii</i> series						
<i>Pseudotsuga menziesii</i> / <i>Holodiscus dumosus</i> H.T. (Scree Forest)	Mountains of New Mexico and southern Colo- rado	Warm dry to well- drained	Seral to <i>P. menziesii</i>	<i>P. menziesii</i> <i>P. engelmannii</i> <i>P. tremuloides</i> <i>P. strobiformis</i>	<i>H. dumosus</i> <i>Salix</i> spp. <i>S. oreophilus</i> <i>B. ciliatus</i>	DeVelice et al. 1984 Fitzhugh et al. 1984
<i>Thuja plicata</i> series						
<i>Thuja plicata</i> / <i>Oplopanax horridum</i> H.T.	Mountains of northwestern Montana	Warm wet to cool wet	Seral or minor climax to <i>T. plicata</i>	<i>T. plicata</i> <i>T. heterophylla</i> <i>T. mertensiana</i> <i>P. monticola</i>	<i>O. horridum</i> <i>Athyrium felix- femina</i> <i>Gymnocarpium</i> <i>dryopteris</i>	Pfister et al. 1977

Table A8.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal tree associates	Principal understory species	Authority
<i>Thuja plicata</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northwestern Montana and northern Idaho	Cool to warm dry bottom- lands	Seral or minor climax to <i>T. plicata</i>	<i>T. plicata</i> <i>A. grandis</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>P. contorta</i>	<i>C. uniflora</i> <i>M. ferruginea</i> <i>A. nudicaulis</i> <i>X. tenax</i>	Cooper et al. 1983 Pfister et al. 1977
<i>Abies grandis</i> series						
<i>Abies grandis</i> / <i>Acer glabrum</i> H.T.	Mountains of central Idaho	Warm moist	Minor climax to <i>A. grandis</i>	<i>A. grandis</i> <i>P. contorta</i> <i>P. menziesii</i>	<i>A. glabrum</i> <i>P. malvaceus</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Linnaea borealis</i> H.T.	Mountains of central Montana	Cool moist to well- drained	Minor climax to <i>A. grandis</i>	<i>A. grandis</i> <i>P. contorta</i> <i>P. engelmannii</i> <i>P. monticola</i> <i>P. ponderosa</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>L. borealis</i> <i>Adenocaulon bicolor</i> <i>Disporum hookeri</i>	Pfister et al. 1977
<i>Abies grandis</i> / <i>Vaccinium</i> <i>caespitosum</i> H.T.	Mountains of central Idaho	Cool well- drained	Minor climax to <i>A. grandis</i>	<i>A. grandis</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>V. caespitosum</i> <i>F. virginiana</i> <i>C. rubescens</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Vaccinium globulare</i> H.T.	Mountains of central Idaho	Cool well- drained	Minor climax to <i>A. grandis</i>	<i>A. grandis</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i>	<i>V. globulare</i>	Steele et al. 1981
<i>Abies grandis</i> / <i>Xerophyllum tenax</i> H.T.	Mountains of northern Idaho	Cool dry	Minor climax to <i>A. grandis</i>	<i>A. grandis</i> <i>P. engelmannii</i> <i>P. contorta</i> <i>P. ponderosa</i> <i>P. menziesii</i>	<i>X. tenax</i> <i>V. globulare</i>	Cooper et al. 1983
<i>Abies grandis</i> / <i>Clintonia uniflora</i> H.T.	Mountains of west-central and northwestern Montana and northern Idaho	Warm moist	Minor climax to <i>A. grandis</i>	<i>A. grandis</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>L. occidentalis</i> <i>P. contorta</i> <i>P. ponderosa</i>	<i>C. uniflora</i> <i>L. borealis</i> <i>A. bicolor</i> <i>X. tenax</i> <i>M. ferruginea</i>	Cooper et al. 1983 Pfister et al. 1977
<i>Abies grandis</i> / <i>Coptis occidentalis</i> H.T.	Mountains of northern Idaho	Warm moist	Minor climax to <i>A. grandis</i>	<i>A. grandis</i> <i>P. engelmannii</i> <i>L. occidentalis</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. ponderosa</i>	<i>C. occidentalis</i> <i>V. globulare</i> <i>X. tenax</i> <i>S. albus</i>	Cooper et al. 1983
<i>Abies grandis</i> / <i>Senecio triangularis</i> H.T.	Mountains of nor- thern Idaho	Warm moist	Minor climax to <i>A. grandis</i>	<i>A. grandis</i> <i>P. engelmannii</i> <i>L. occidentalis</i>	<i>S. triangularis</i> <i>A. felix-femina</i> <i>Trautvetteria</i> <i>caroliniensis</i>	Cooper et al. 1983

Table A8.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal tree associates	Principal understory species	Authority
<i>Abies concolor</i> series						
<i>Abies concolor</i> / <i>Acer glabrum</i> H.T.	Mountains of northern New Mexico	Warm moist	Minor climax to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. ponderosa</i> <i>P. strobiformis</i> <i>P. tremuloides</i>	<i>A. glabrum</i> <i>J. communis</i> <i>B. repens</i> <i>H. dumosus</i> <i>H. hoopesii</i> <i>C. stolonifera</i>	Fitzhugh et al. 1984
<i>Abies concolor</i> / <i>Vaccinium myrtillus</i> H.T.	Mountains of northern New Mexico and southern Colo- rado	Cool dry	Minor climax to <i>A. concolor</i> <i>P. menziesii</i>	<i>A. concolor</i> <i>P. menziesii</i> <i>P. pungens</i> <i>P. engelmannii</i> <i>P. tremuloides</i>	<i>V. myrtillus</i> <i>A. uva-ursi</i> <i>P. myrsinites</i> <i>A. glabrum</i> <i>R. parviflorus</i>	DeVelice et al. 1984
<i>Tsuga heterophylla</i> series						
<i>Tsuga heterophylla</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northwestern Montana and northern Idaho	Warm moist	Minor climax to <i>T. heterophylla</i> <i>T. plicata</i>	<i>T. heterophylla</i> <i>T. plicata</i> <i>P. monticola</i> <i>P. contorta</i> <i>P. menziesii</i> <i>L. occidentalis</i> <i>P. engelmannii</i>	<i>C. uniflora</i> <i>A. nudicaulis</i> <i>X. tenax</i> <i>M. ferruginea</i>	Cooper et al. 1983 Pfister et al. 1977
<i>Tsuga mertensiana</i> series						
<i>Tsuga mertensiana</i> / <i>Menziesia ferruginea</i> H.T.	Mountains of northern Idaho and western Mon- tana	Cool moist	Minor climax to <i>T. mertensiana</i>	<i>T. mertensiana</i> <i>P. engelmannii</i> <i>L. occidentalis</i> <i>P. contorta</i>	<i>M. ferruginea</i> <i>R. albiflorum</i> <i>X. tenax</i> <i>L. hitchcockii</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977
<i>Tsuga mertensiana</i> / <i>Xerophyllum tenax</i> H.T.	Mountains of northern Idaho, northwestern Montana, and British Columbia south to central Oregon	Warm dry	Seral to or co-climax with <i>T. mertensiana</i>	<i>T. mertensiana</i> <i>P. contorta</i> <i>P. menziesii</i> <i>P. engelmannii</i> <i>P. albicaulis</i> <i>P. monticola</i> <i>L. occidentalis</i>	<i>X. tenax</i> <i>V. membranaceum</i> <i>V. globulare</i>	Cooper et al. 1983 Daubenmire and Daubenmire 1968 Pfister et al. 1977
<i>Tsuga mertensiana</i> / <i>Luzula hitchcockii</i> H.T.	Mountains of western Montana and northern Idaho	Cool well- drained	Co-climax with <i>T. mertensiana</i>	<i>T. mertensiana</i> <i>P. contorta</i> <i>P. albicaulis</i> <i>P. engelmannii</i>	<i>L. hitchcockii</i> <i>V. scoparium</i> <i>X. tenax</i> <i>A. latifolia</i>	Pfister et al. 1977
<i>Tsuga mertensiana</i> / <i>Clintonia uniflora</i> H.T.	Mountains of northern Idaho	Warm moist	Seral or minor climax to <i>T. mertensiana</i>	<i>T. mertensiana</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>P. contorta</i> <i>L. occidentalis</i>	<i>C. uniflora</i> <i>X. tenax</i> <i>M. ferruginea</i>	Cooper et al. 1983
<i>Tsuga mertensiana</i> / <i>Streptopus amplexifolius</i> H.T.	Mountains of northern Idaho	Warm moist	Seral or minor climax to <i>T. mertensiana</i>	<i>T. mertensiana</i> <i>P. engelmannii</i> <i>P. menziesii</i> <i>L. occidentalis</i>	<i>S. amplexifolius</i> <i>S. triangularis</i> <i>T. caroliniensis</i> <i>M. ferruginea</i>	Cooper et al. 1983

Table A8.—(continued)

Habitat type, community type, or plant community	Location	Site	Successional status of <i>A. lasiocarpa</i>	Principal tree associates	Principal understory species	Authority
<i>Pinus albicaulis</i> series						
<i>Pinus albicaulis</i> / <i>Vaccinium scoparium</i> H.T.	Mountains of northwestern Wyoming	Cool dry	Minor climax to <i>P. albicaulis</i> <i>P. contorta</i>	<i>P. albicaulis</i> <i>P. contorta</i> <i>P. engelmannii</i>	<i>V. scoparium</i> <i>A. cordifolia</i> <i>C. rossii</i>	Steele et al. 1983
<i>Pinus albicaulis</i> / <i>Carex rossii</i> H.T.	Mountains of northwestern Wyoming	Cool dry	Minor climax to <i>P. albicaulis</i>	<i>P. albicaulis</i> <i>P. contorta</i> <i>P. engelmannii</i> (minor climax)	<i>C. rossii</i>	Steele et al. 1983
<i>Pinus albicaulis</i> - <i>Abies lasiocarpa</i> H.T.	Mountains of northern Idaho and Montana	Cool dry	Co-climax with <i>P. albicaulis</i>	<i>P. albicaulis</i> <i>P. engelmannii</i>	<i>V. scoparium</i> <i>A. latifolia</i> <i>Hieracium gracile</i>	Cooper et al. 1983 Pfister et al. 1977
<i>Larix lyallii</i> series						
<i>Larix lyallii</i> - <i>Abies lasiocarpa</i> H.T.	Mountains of Montana west of Continental Divide, and north- ern Idaho	Cool dry	Co-climax with <i>L. lyallii</i>	<i>L. lyallii</i> <i>P. engelmannii</i> <i>P. albicaulis</i>	<i>P. empetrifomis</i> <i>V. scoparium</i> <i>L. hitchcockii</i>	Cooper et al. 1983 Pfister et al. 1977

Alexander, Robert R. 1985. Major habitat types, community types, and plant communities in the Rocky Mountains. USDA Forest Service General Technical Report RM-123, 105 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.

Habitat types, community types and plant communities in the Rocky Mountains in which interior *Pinus ponderosa*, interior *Pseudotsuga menziesii*, interior *Abies concolor*, *Picea pungens*, *Populus tremuloides*, *Pinus contorta*, *Picea engelmannii*, and *Abies lasiocarpa* occur are tabulated. Included are the name, location, site, successional status, principal tree and understory associates, and the authority.

Keywords: Vegetation classification, habitat type, community type, plant community, *Pinus ponderosa*, *Pseudotsuga menziesii*, *Picea pungens*, *Abies concolor*, *Populus tremuloides*, *Pinus contorta*, *Picea engelmannii*, *Abies lasiocarpa*.

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Habitat types, community types and plant communities in the Rocky Mountains in which interior *Pinus ponderosa*, interior *Pseudotsuga menziesii*, interior *Abies concolor*, *Picea pungens*, *Populus tremuloides*, *Pinus contorta*, *Picea engelmannii*, and *Abies lasiocarpa* occur are tabulated. Included are the name, location, site, successional status, principal tree and understory associates, and the authority.

Keywords: Vegetation classification, habitat type, community type, plant community, *Pinus ponderosa*, *Pseudotsuga menziesii*, *Picea pungens*, *Abies concolor*, *Populus tremuloides*, *Pinus contorta*, *Picea engelmannii*, *Abies lasiocarpa*.

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Habitat types, community types and plant communities in the Rocky Mountains in which interior *Pinus ponderosa*, interior *Pseudotsuga menziesii*, interior *Abies concolor*, *Picea pungens*, *Populus tremuloides*, *Pinus contorta*, *Picea engelmannii*, and *Abies lasiocarpa* occur are tabulated. Included are the name, location, site, successional status, principal tree and understory associates, and the authority.

Keywords: Vegetation classification, habitat type, community type, plant community, *Pinus ponderosa*, *Pseudotsuga menziesii*, *Picea pungens*, *Abies concolor*, *Populus tremuloides*, *Pinus contorta*, *Picea engelmannii*, *Abies lasiocarpa*.

Alexander, Robert R. 1985. Major habitat types, community types, and plant communities in the Rocky Mountains. USDA Forest Service General Technical Report RM-123, 105 p. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colo.

Habitat types, community types and plant communities in the Rocky Mountains in which interior *Pinus ponderosa*, interior *Pseudotsuga menziesii*, interior *Abies concolor*, *Picea pungens*, *Populus tremuloides*, *Pinus contorta*, *Picea engelmannii*, and *Abies lasiocarpa* occur are tabulated. Included are the name, location, site, successional status, principal tree and understory associates, and the authority.

Keywords: Vegetation classification, habitat type, community type, plant community, *Pinus ponderosa*, *Pseudotsuga menziesii*, *Picea pungens*, *Abies concolor*, *Populus tremuloides*, *Pinus contorta*, *Picea engelmannii*, *Abies lasiocarpa*.



Rocky
Mountains



Southwest



Great
Plains

U.S. Department of Agriculture
Forest Service

Rocky Mountain Forest and Range Experiment Station

The Rocky Mountain Station is one of eight regional experiment stations, plus the Forest Products Laboratory and the Washington Office Staff, that make up the Forest Service research organization.

RESEARCH FOCUS

Research programs at the Rocky Mountain Station are coordinated with area universities and with other institutions. Many studies are conducted on a cooperative basis to accelerate solutions to problems involving range, water, wildlife and fish habitat, human and community development, timber, recreation, protection, and multiresource evaluation.

RESEARCH LOCATIONS

Research Work Units of the Rocky Mountain Station are operated in cooperation with universities in the following cities:

Albuquerque, New Mexico
Flagstaff, Arizona
Fort Collins, Colorado*
Laramie, Wyoming
Lincoln, Nebraska
Rapid City, South Dakota
Tempe, Arizona

* Station Headquarters: 240 W. Prospect St., Fort Collins, CO 80526